A 11.A.1613.1

James Jackson

32, 42,

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A TREATISE

ON

FEBRILE DISEASES,

INCLUDING

THE VARIOUS SPECIES OF FEVER,

AND

ALL DISEASES ATTENDED WITH FEVER.

BY

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TO

DR. BAILLIE, M. D. F. R. S. L. & E.

PHYSICIAN EXTRAORDINARY TO THE KING, FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS IN LONDON, AND HONORARY FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS IN EDINBURGH, &c. &c. &c.

DEAR SIR,

THE approbation, you were so kind as to express of the following treatise, has been a principal motive for the trouble it has cost me to bring it into its present, I hope, improved state. But this is only one of many reasons for addressing it to you. The testimonies of friendship I have

received from you, the assistance I have often derived from your excellent works, your rank in the profession, and above all, your character as a man, make this public declaration of esteem peculiarly gratifying to me.

I am,

Dear Sir,

With unfeigned respect,

Your obliged Friend

And faithful Servant,

A. P. WILSON PHILIP.

PREFACE.

In reviſing the following treatiſe my only object has been to render it more uſeful to the practitioner. I have endeavoured to reduce it into as ſmall a compaſs as the nature of the work admits of; for it was offered to the public not as an out-line, but as nearly the ſum of our knowledge on the ſubject.

In one branch I have been particularly careful to avoid any omiſſion of importance. It is evident that much muſt depend on a minute knowledge of the ſymptoms of diſeaſes, by which we acquire the power of accurately diſtinguiſhing them, and of aſcertaining by the variation of their ſymptoms, the changes which are taking place internally.

Although, for the ſake of compreſſion, I ſhall leſs frequently enter on the opinions of others or give quotations from their works, and many years' additional experience has enabled me to ſpeak more frequently from my own obſervation, than in the former editions, I ſhall not ſuppreſs any of the authorities there adduced.

Of the obſervations which have been made on this treatiſe, there are two which I feel myſelf called upon to notice. I have been accuſed of diſreſpect towards Dr. Cullen, and ſaid to eſpouſe the practical tenets of Dr. Brown.

It is true that, after a very ſhort diſcuſſion, I rejected Dr. Cullen's doctrine of fever, but it was admitted by its author to be hypothetical, and confeſſedly brought forward only for the purpoſe of connecting the different parts of the ſubject. It is not Dr. Cullen's praiſe that he invented an ingenious hypotheſis, but that he new-modelled, if I may uſe the expreſſion, the whole practice of medicine; that in his *Synopſis Noſologiæ Methodicæ*, he defined and arranged diſeaſes with an accuracy far beyond his predeceſſors; and in his *Firſt Lines*, reduced their treatment to a degree of ſimplicity formerly unknown. In every part of the treatiſe theſe merits of Dr. Cullen, the higheſt a medical writer can boaſt, are acknowledged not only with franknefs but with pleaſure; for I had no leſs reaſon to love and eſteem him as an individual, than to honor and admire him as the firſt phyſician of his age.

Dr. Brown in forming his, certainly very ſimple and ingenious hypotheſis, proceeded on a different principle. It was not his object merely to connect together the different phenomena of fever, till we arrive at a more accurate knowledge of the nature of diſeaſe. He maintained the truth of his opinions, and founded them on principles whoſe truth all muſt admit, and whoſe truth indeed was univerſally admitted long before he wrote. But I was ſo far from adopting theſe opinions, that many pages were devoted to pointing out that his chief inferences are falſe; and with reſpect to the application of his doctrine to the cure of diſeaſes, the following is the opinion given in both the former editions of this treatiſe. "We come now to that part of the Brunonian ſyſtem where truth for the firſt time wholly forſakes us. In other parts if errors have appeared, they are the errors of raſh induction; that we are about to conſider is, *as far as I am capable of judging, altogether unfounded.* I

mean the application of the Brunonian doctrine of excitability to explain the phenomena and treatment of general diſeaſes." *

My opinion of the nature of fever I ſtated ſome years ago in a ſeparate eſſay. It was once my intention to enter on a diſcuſſion of it in the following treatiſe, but from my wiſh to compreſs the treatiſe, and make it wholly a practical work, I ſhall merely lay this opinion before the reader, and leave it for his conſideration. He will have an opportunity of judging in the peruſal of the following work, how far it is conſiſtent with the various phenomena of fever.

It appears from ſome experiments with the microſcope, related in the introduction to the ſecond part of this treatiſe, that inflammation ariſes from debility of the capillary veſſels, and their conſequent diſtenſion by the *vis a tergo;* and that we can at will produce inflammation by debilitating the capillaries, and relieve it by increaſing their action. Wherever therefore, the ſymptoms of inflammation, increaſed temperature, redneſs and ſwelling appear, the capillary veſſels are debilitated and preternaturally diſtended. Now in the hot ſtage of fever, the whole ſurface is affected with increaſed temperature, redneſs and ſwelling. That the capillary veſſels of the ſurface are here in a ſtate of debility farther appears from the preceding ſymptoms, thoſe of the cold ſtage, in which, the debilitated veſſels not yet being diſtended by the *vis a tergo*, the ſurface is pale and ſhrunk. We can have no doubt that the ſame ſtate of the veſſels, which we obſerve in the external ſurface, obtains in the various internal ſurfaces, which is indicated by the ſame diminution or loſs of the ſecreting power in them, and as far as we can ſee, the ſame ſhrinking in the cold, and fullneſs and redneſs in the hot

* Vol. 1, first edition, p. 492, second edition, 522.

ſtage: and as the debility of the capillaries of a part, as appears from direct obſervation,* always produces increaſed action of the larger arteries of the part, this general debility of the capillaries produces increaſed action of the whole arterial ſyſtem. In inflammation, the debilitated veſſels being comparatively few, the *vis a tergo* quickly and to a great degree diſtends them. In fever, the debilitated veſſels being very numerous, it produces its effect more ſlowly and to a leſs degree, in proportion as the reſiſtance is greater. Fever and inflammation, therefore, ſeem only to differ in the one being a general, the other a local affection; to which all the differences in the phenomena of theſe diſeaſes may, I believe, be eaſily traced.†

As the ſmall-pox has now become a leſs intereſting diſeaſe than it has long been, and it is to be hoped will be every day becoming leſs ſo, I have greatly abridged my account of it. I ſhall ſtill, however, give a detailed account of its ſymptoms, and inſiſt on thoſe parts of the treatment in which it bears a ſtrong analogy to the diſeaſes with which it is claſſed; for none of theſe have attracted ſo much attention, and conſequently been obſerved with ſo much care; and did the ſmall-pox no longer exiſt, in obſerving the phenomena and improving the treatment of the other Exanthemata, we ſhould long have occaſion to refer to the obſervations which have been made on it.‡

* See the introduction to the ſecond part of this treatiſe.

† See what is said of hemorrhagy and profluvium in the introduction to the second part.

‡ I take this opportunity of requesting M. Topelmann of Leipsick, who has done the following treatise the honor of translating it into the German language, in case the present edition falls into his hands, to give from it, in an appendix, such alterations and additions as seem worthy of notice.

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ERRATA.

Page 41, line 3, for *II* read *III*.
Page 163, line last but two, for *the*, read *one*.
Page 186, line 24, for *have*, read *has*.
Page 258, line 11, for *attended*, read *attend*.
Page 277, line last, for *pulsu*, read *pulsus*.
Page 281, line 6, for *endeavoured*, read *endeavour*.
Page 287, line 17, for *the latter season*, read *autumn*.
Page 290, line 23, for *Serpenteria*, read *Serpentaria*.
Page 294, line 1, for *V*, read *IV*.
Page 409, line 12, for *effusion*, read *affusion*.
Page 475, line last but two, for *divisions*, read *division*.
Page 504, line 2, for *appear*, read *appears*.

A

TREATISE

ON

FEBRILE DISEASES, &c.

INTRODUCTION.

THE diſeaſes we are about to conſider may be divided into two great natural claſſes. In the one the fever is idiopathic, in the other, the conſequence of a local diſeaſe. Some noſological obſervations on theſe claſſes, and on the various ſpecies arranged under them, form a neceſſary introduction to the following Treatiſe.

The ſymptoms of a diſeaſe may be divided into those which form the diagnoſis, that is, diſtinguiſh it from others; thoſe which form the prognoſis, namely, thoſe from which we prognoſticate the event, and thoſe which in the preſent ſtate of our knowledge ſerve neither purpoſe.

It may be ſaid that we ſhould confine our attention to the two firſt ſets of ſymptoms, and that a knowledge of the other ſymptoms can be of no uſe to the phyſician. To this it may be anſwered, that theſe ſymptoms may throw light on ſome of the functions, they may aſſiſt in aſcertaining the

nature of the diſeaſe, and conſequently the proper remedies. But ſhould they ſerve none of theſe purpoſes, it is neceſſary to be acquainted with them, that their appearance may not diſconcert us, and becauſe it is poſſible that as our knowledge extends, an acquaintance with them may prove more uſeful.

Thoſe whoſe obſervations have ſerved moſt to advance the knowledge of diſeaſes, have accurately obſerved and recorded every fact which preſented itſelf. And many facts which appeared uſeleſs have, in a more advanced ſtate of ſcience, ſerved to point out diſtinctions and analogies, which could not have ſuggeſted themſelves to the firſt obſerver.

Of the foregoing ſets of ſymptoms, that which forms the diagnoſis is the moſt important. The diagnoſtic ſymptoms of diſeaſes have been collected into ſhort ſentences, which have been termed their characters or definitions, by means of which the learner is aſſiſted in acquiring the power of diſtinguiſhing them; and for the purpoſe of farther aiding the memory, theſe characters have been variouſly arranged, or digeſted into ſyſtems.

The general principle on which ſuch ſyſtems are conſtructed is very ſimple. From the ſymptoms common to the characters of thoſe diſeaſes which reſemble each other, a general character is formed, under which the particular characters are arranged, and which is termed the character of the order. And in like manner from the characters of ſeveral orders, having certain ſymptoms in common, the character of a claſs including theſe orders is formed. Thus diſeaſes are arranged under claſſes, orders, and genera. The genera being occaſionally divided into ſpecies and theſe into varieties.

There are two things then aimed at by the noſologiſt; the firſt, to give an accurate character of each diſeaſe, by which is meant (as appears from what has juſt been ſaid) not an account of all the ſymptoms, not a deſcription of the diſeaſe

as it really appears, but merely an enumeration of a certain ſet of its ſymptoms, which either at the ſame time or in ſucceſſion conſtantly attend it, and diſtinguiſh it from others.—The ſecond thing aimed at by the noſologiſt is to arrange the characters of diſeaſes methodically, that is, in ſuch a way as beſt aſſiſts the memory. In each we shall find difficulties which appear to be unſurmountable, ſo that a perfect ſyſtem of noſology is not to be expected; but we have reaſon to believe that there is ſtill much room for improving our present ſyſtems.

Dr. Cullen's ſyſtem, both in its arrangement and definitions, ſo much excels thoſe which preceded it, that it will be unneceſſary to take particular notice of any other.* He divides all diſeaſes into four claſſes, Pyrexiæ, Neuroſes, Cachexiæ, and Locales. The diſeaſes arranged under the firſt claſs are thoſe I am to treat of. It comprehends all febrile diſeaſes. Theſe he divides into five orders, Febres, Phlegmaſiæ, Exanthemata, Hæmorrhagiæ, and Profluvia. The claſs he defines,

"Poſt horrorem pulſus frequens, calor major, plures func-
"tiones læſæ, viribus præſertim artuum imminutis."†

The firſt order arranged under it (the Febres) he defines,

"Prægreſſis languore, laſſitudine et aliis debilitatis ſignis,
"pyrexia ſine morbo locali primario."

The ſecond order (the Phlegmaſiæ) is defined,

"Febris ſynocha; phlogoſis; vel dolor topicus, ſimul læſa

* The reader will find a short view of the nosological systems of Sauvages, Linnæus, Vogelius, Sagare, and M'Bride, in the first volume of Dr. Cullen's *Synopsis Nosologiæ Methodicæ*.

† Characters of diseases are generally expressed in Latin, because it is difficult to remember accurately what is expressed in the language employed for the common purposes of life; we are apt to change the mode of expression, and consequently often the meaning.

" partis internæ functione; ſanguis miſſus, et jam concretus,
" ſuperficiem coriaceam albam oſtendens."

The third order (the Exanthemata) Dr. Cullen defines,

" Morbi contagioſi, ſemel tantum in decurſu vitæ aliquem
" afficientes; cum febre incipientes; definito tempore ap-
" parent phlogoſes, ſæpe plures, exiguæ per cutem ſparſæ."

His definition of the fourth order (the Hemorrhagiæ) is,

" Pyrexia cum profuſione ſanguinis abſque vi externa;
" ſanguis miſſus ut in phlegmaſiis apparet."

The laſt order (the Profluvia) is defined,

" Pyrexia cum excretione aucta, naturaliter non ſan-
" guinea."

Such is Dr. Cullen's mode of arranging febrile diſeaſes. I ſhall here point out in what I mean to deviate from it, and my reaſons for doing ſo; which will make the reader acquainted with the plan to be purſued in the following work.

The orders arranged under Dr. Cullen's claſs of Pyrexiæ materially differ from each other in the following circumſtances:

The fever in two of theſe orders (the Febres and Exanthemata) is ſtrictly idiopathic. It is true indeed that local affections accompany the Exanthemata; but theſe appearing a conſiderable time after the commencement of the fever, cannot be regarded as its cauſe. Beſides, its degree is not at all proportioned to that of the local affection; in ſome inſtances ſo much the contrary, that the more conſiderable the local affection, the milder is the fever. This is the caſe in the plague and the ſimple ſcarlet fever; nay, where certain cauſes conſpire to prevent the fever, the local affection of the Exanthemata often exists, and that to a conſiderable degree, without fever. This frequently happens in the plague, and ſometimes in the ſmall-pox, though not ſo ſtrikingly; for there the local affection is generally inconſiderable when un-

attended by fever. We ſhall find alſo, that in the Exanthemata, the fever, with all its peculiar ſymptoms, has often appeared without any eruption; this is true of the plague, ſmall-pox, and meaſles, and probably of all the others. So far indeed is the local affection from occaſioning the fever, that the latter generally ſuffers an abatement, and is ſometimes wholly removed, on the appearance of the eruption.

In the Exhanthemata then, the fever is as truly an idiopathic affection as in fevers properly ſo called; and in laying down the practice in thoſe diſeaſes we ſhall find it treated as ſuch. The firſt and third orders of Dr. Cullen's Pyrexiæ, therefore, agree in the moſt eſſential point—in that which, we ſhall find, more than any other, influences our practice in febrile diſeaſes.

On the contrary, in the three remaining orders, (the Phlegmaſiæ, Hæmorrhagiæ, and Profluvia) the fever always accompanies ſome local affection; being not only proportioned to it, but varying in kind as the local affection varies; and the principles on which the practice in theſe orders of diſeaſes is conducted, are ſo modified by this circumſtance, as to differ widely from thoſe which regulate the treatment of the Febres and Exanthemata.

In the one ſet of diſeaſes, the fever is the primary diſeaſe; in the other, merely the conſequence of ſome local affection. In the former, our whole attention is directed towards removing the febrile ſymptoms; in the latter, the local affection demands our chief attention; and experience has taught us that if we ſucceed in removing this, we at the ſame time remove the fever which attends it.

Theſe circumſtances conſidered, does it not appear a neceſſary alteration of Dr. Cullen's mode of arranging febrile diſeaſes, to divide his Pyrexiæ into two claſſes, the idiopathic, and ſymptomatic fevers?

To arrange the Phlegmaſiæ after the Febres, and before the Exanthemata, (diſeaſes ſo much allied to the Febres) and after conſidering the Exanthemata, to return to the Hæmorrhagiæ and Profluvia, (diſeaſes in their nature ſo nearly reſembling the Phlegmaſiæ) tends to perplex our ideas of the different orders of the Pyrexiæ.

Dr. Cullen and other ſyſtematic writers ſeem to have adopted this mode of arrangement, either becauſe they regarded the Exanthemata as diſeaſes compounded of the Febres and Phlegmaſiæ, and conſequently conſidered it proper to treat of both the latter ſets of diſeaſes before the former; or they thought that their account of the inflammatory affection which appears in the Exanthemata, would be more readily underſtood after treating of the Phlegmaſiæ; and thus repetition be prevented, which it cannot be if we firſt deſcribe the eruptions of the Exanthemata, and afterwards the different ſpecies of inflammation.

The idea on which the former of theſe arguments is founded, is falſe, if by Phlegmaſia we mean any thing more than a local affection, (as will preſently more plainly appear) and may lead to errors in practice.

The latter ſeems a better argument; for almoſt every thing we ſay, when we deſcribe the Phlegmon in the ſmallpox, for inſtance, muſt be repeated in deſcribing Dr. Cullen's firſt genus of the Phlegmaſiæ, the Phlogoſis. This objection, however, is leſs in a ſyſtem of practice, than in a noſological ſyſtem. In the former, for the ſake of perſpicuity, nearly the ſame deſcription of the eruption in the Exanthemata is neceſſary, whether the Phlegmaſiæ have been previouſly conſidered or not.

Here then on each ſide we find an obſtacle oppoſed to our advancement in noſological accuracy: a probable inference from which is, that we are not proceeding on a proper plan.

The error ſeems to be, that we are conſidering the more complicated, before we have treated of the more ſimple diſeaſes.

Not only the Pyrexiæ, but the Neuroſes and Cachexiæ, ought to be placed after the affections which are merely local, by far the greater part of which are conſtantly occurring in the general and more complicated diſeaſes.

In the claſs of local diſeaſes, there ſhould be an order for ſimple inflammations, for ſuch inflammations as are not attended by fever, as pimples, and that habitual and ſuperficial redneſs of the face and hands which never produces fever. Such an order indeed would include ſome diſeaſes of importance, certain ſpecies of Ophthalmia, for inſtance, and the Aphthæ Infantum. No ſymptom of theſe is mentioned in Dr. Cullen's definition of Pyrexia. They might as well be arranged under any other definition in the whole noſology.

The Phlegmaſiæ, as defined by Dr. Cullen, are diſeaſes compounded of ſimple inflammation and fever. There are the ſame reaſons, therefore, for treating of ſimple inflammation before the Phlegmaſiæ, which have induced noſologiſts to arrange the latter before the Exanthemata. But the Exanthemata alſo are compounded of ſimple inflammation and fever, not of Phlegmaſiæ and fever. When a Phlegmaſia ſupervenes on an Exanthema, the combination is of quite a different nature from that of the primary fever of the Exanthema and the ſimple inflammation which ſucceeds it.

There is no better reaſon then (reſulting merely from a view of the diſeaſes themſelves) for arranging the Phlegmaſiæ before the Exanthemata, than for arranging the Exanthemata before the Phlegmaſiæ. But ſince in both two more ſimple affections are combined, theſe ſhould be conſidered before either. And ſince in the Exanthemata the fever is idiopathic, they ſhould be arranged with other idiopathic fevers, and consequently before the Phlegmaſiæ.

Dr. Cullen is led into ſeveral difficulties, by treating of the Phlegmaſiæ without having previouſly conſidered ſimple inflammations. In the definition of the Phlegmaſiæ, Phlogoſis is mentioned; but Phlogoſis is a genus of this order, so that this diſeaſe is arranged under an order, of whoſe definition it forms a part; as if we were to define the Exanthemata, fever attended with eruption, and then arrange eruption as a genus of the order. Beſides, Phlogoſis is the name of a diſeaſe, and is here uſed before the diſeaſe has been defined.

Dr. Cullen perceived the difficulty; it is one indeed which it was impoſſible for him not to perceive, and, in order to make it leſs apparent has recourſe to a degree of obſcurity. In the definition of the Phlegmaſiæ he ſays, "Febris ſynocha, "phlogoſis," &c. evidently implying by Phlogoſis, nothing more than a ſimple external inflammation, and immediately after he informs us, that it is a febrile diſeaſe.

If Phlogoſis is made a genus of the Phlegmaſiæ, it muſt be a febrile diſeaſe; if not, there is no place for it in Dr. Cullen's ſyſtem. It would have been eaſy for him in the definition of the Phlegmaſiæ, inſtead of the term Phlogoſis, to have uſed ſome other, expreſſive of ſimple inflammation; but he muſt then have mentioned a diſeaſe not to be found in his noſology.

The ſame circumſtance forces him into an error of no leſs conſequence, in his definition of the Exanthemata.—There again the want of a term expreſſive of ſimple inflammation recurs, and he is again obliged to employ Phlogoſis, which he has defined to be a febrile diſeaſe. Phlogoſis is an external inflammation occaſioning fever; the eruption in the Exanthemata, inſtead of occaſioning, uſually even relieves it.

Had Dr. Cullen treated of ſimple inflammations, as well as ſimple fevers, before the more complicated diſeaſes, he

would have avoided all the foregoing difficulties. There would have been no reaſon for interrupting the conſideration of idiopathic fevers, to introduce the order of Phlegmaſiæ, which, although the ſixth or ſeventh part of the whole noſology, ſtands in his ſyſtem as in a parentheſis.

He would not have been obliged to confound in one claſs, diſeaſes ſo different as idiopathic and ſymptomatic fevers, which he certainly would have avoided, had not his mode of arrangement rendered it neceſſary to place the Phlegmaſiæ before the Exanthemata, which could only be done by making one claſs of all kinds of fevers.

He would not have been obliged either to exclude from his ſyſtem the ſimple inflammations, or to arrange the genera of this order among febrile diſeaſes.* He would not have found it neceſſary to employ the name of a diſeaſe before he had defined it, nor run into the inaccuracy of arranging as a genus under an order, a diſease the name of which he finds it neceſſary to uſe in the definition of that order. In ſhort, febrile diſeaſes, the moſt eſſential part of a ſyſtem of noſology, would have admitted of a more ſyſtematic arrangement.

Such are the circumſtances, which have induced me to divide Dr. Cullen's Pyrexiæ into two claſſes, the idiophathic and ſymptomatic fevers. I am now to make a few noſological obſervations on each of theſe claſſes.

The former, I have already had occaſion to obſerve, comprehends only two of the orders of Dr. Cullen's Pyrexiæ,

* Dr. Cullen might have formed an order in the Locales for simple inflammations; but introducing them into any part of his system after the Phlegmasiæ, would have only rendered the difficulty of forming an accurate definition of the Phlegmasiæ the more apparent. The only means of avoiding the difficulties which have been mentioned, seems to be making the Locales the first class of diseases.

the firſt and third, the Febres and Exanthemata. In every febrile diſeaſe, which cannot be referred to one of theſe orders, the fever, we ſhall find, muſt be regarded as ſymptomatic.

However different the ſymptoms which diſtinguiſh the different genera of idiopathic fevers, there are certain ſymptoms common to all of them, and which may therefore be allowed to conſtitute fever, or in other words to form the the definition of this claſs of diſeaſes. Let us endeavour to determine what theſe ſymptoms are.

We are informed by Van Swieten, that Boerhaave, with much labour, collected from a great variety of authors, all the ſymptoms which they had obſerved in fevers. From theſe he threw out ſuch as did not appear in all fevers, and was much ſurpriſed to find the catalogue of ſymptoms common to all kinds of fever, ſo ſhort. It was reduced to the three following, ſhivering, or as it has been termed rigors, a frequent pulſe, and heat.

But it may be obſerved that no one even of theſe ſymptoms conſtantly attends fever. The ſhivering is almoſt always confined to the commencement of the fever, or to that of its exacerbations, and ſometimes is not obſerved at all.—Both Boerhaave and his commentator allow, that although the ſhivering is preſent at the commencement of fever, when ariſing from an internal cauſe, ſuch as contagion, yet when it ariſes from what they call an external cauſe, ſuch as rage, violent exerciſe, &c. it often comes on without any ſenſe of cold.

Many of the ancients, although they did not wholly overlook the ſtate of the pulſe, as appears from ſeveral paſſages in the works of Hippocrates, ſeem to have regarded the laſt of the three ſymptoms juſt mentioned (the increaſe of temperature) as that which conſtitutes fever.

It is well known, however, that in certain kinds of fever the temperature of the body often falls below the natural ſtandard. In the commencement of the cold ſtage it generally does ſo, and very often in the progreſs of that ſpecies of fever which has been termed the low nervous fever. The ſhivering, or ſenſe of cold, then, and increaſe of temperature, are ſymptoms, not only not preſent at every period of theſe diſeaſes, but not even at any period eſſential to fever.

Thus one ſymptom only remains to conſtitute the diſeaſe, a frequent pulſe, and to this concluſion Boerhaave was led. But we muſt go a ſtep farther, for although a frequent pulſe is the moſt conſtant of all the ſymptoms of fever, it is not univerſally preſent in this diſeaſe; in malignant fevers the frequency of the pulſe is often obſerved to be no greater, and ſometimes conſiderably leſs, than natural. It has been found to beat only 40, ſometimes only 30, times in a minute. Beſides, by conſidering fever as preſent wherever the frequency of the pulſe is increaſed, we claſs together the moſt diſſimilar affections. With fever, for inſtance, we muſt claſs palpitation of the heart.

The inference from theſe obſervations is plain, that no one ſymptom can be regarded as characteriſtic of fever. We aſcertain its preſence, not by attending to any one, but ſeveral, of its ſymptoms. In ſelecting the train of ſymptoms which characteriſe it, there is much difficulty. The following is the ſelection made by Dr. Cullen: languor, laſſitude, and other ſigns of debility, followed by Pyrexia (that is, by rigors, frequent pulſe, increaſed heat, and derangement of the functions, particularly a want of vigour in the limbs,) without any primary local affection.

Although I quote this, as the beſt definition of fevers which has been given, even its author confeſſes its faults, but pleads juſtly the difficulty of the ſubject. The moſt

exceptionable part is the definition of Pyrexia contained in it.

Fever, it has juſt been obſerved, is not always attended by rigors; even increaſed heat is not uniformly preſent during its progreſs. Increaſed heat, however, it is neceſſary to retain as a part of the definition of fever, ſince it is very generally preſent, and the frequent pulſe, without increaſed heat, often attends diſeaſes of a very different nature. The derangement of the functions, particularly the debility of the limbs, does not very properly enter into the definition; ſince the derangement of ſome of the functions is obſervable in almoſt all diſeaſes, and the derangement particularly ſpecified (the debility of the limbs) is frequently abſent in fever, in which indeed the vigour of the whole ſyſtem is often preternaturally increaſed. For it is to be obſerved, that by Pyrexia in this definition, Dr. Cullen does not mean to expreſs the ſymptoms of the commencement of fever only.

Having arranged under the term Pyrexia ſo many diſeaſes, Dr. Cullen found it neceſſary ſo to define this word as to expreſs the characteriſtic features of a great variety of diſeaſes. If we lay aſide the term Pyrexia, (not attempting to claſs together ſo many) we ſhall conſiderably leſſen the difficulty of giving ſuch a definition of idiopathic fevers, as ſhall apply to all caſes. Dr. Cullen's mode of arrangement obliges him to introduce into his definition of fevers that of Pyrexia. By arranging ſeparately the idiopathic and ſymptomatic fevers, we get rid of this embarraſſment. Idiopathic fevers, as far as I can judge, may be defined as follows:—Prægreſſis languore, laſſitudine, et aliis debilitatis ſignis; pulſus frequens, calor auctus, ſine morbo locali primario. This is the definition of Dr. Cullen's firſt order of the Pyrexiæ, with this change, that pulſus frequens, calor auctus is inſerted, inſtead of Pyrexia. He uſes the definition as the character of an

order, only comprehending fevers properly ſo called. I ſhall uſe it, with this alteration, as the character of a class, comprehending both fevers properly ſo called, and the Exanthemata.

Under this claſs may be arranged three orders; Intermitting and Remitting Fevers; Continued Fevers; and the Exanthemata.

Dr. Cullen gives the following definition of intermitting and remitting fevers:—" Febres miaſmate paludum ortæ, " paroxyſmis pluribus, apyrexia, ſaltem remiſſione evidente, " interpoſita, cum exacerbatione notabili, plerumque cum " horrore, redeuntibus, conſtantes; paroxyſmo quovis die " unico tantum."

In this definition Dr. Cullen, very properly, I think, includes both intermitting and remitting fevers; becauſe (as he obſerves) they ariſe from the same cauſe, are cured by the ſame means, and in the ſame perſon the fever often changes from the one form to the other.

" Paroxyſmo quovis die unico tantum" ſeems exceptionable as both in intermitting and remitting fevers, there are, often two paroxyſms in the ſame day. Dr. Cullen appears to have introduced this part of the definition to aſſiſt in forming a diagnoſis between this ſet of fevers, and thoſe termed continued. It gives very little aſſiſtance, however, we ſhall find, towards this diagnoſis, nor is ſuch a diagnoſis ſo neceſſary, as at firſt ſight it may appear.

With this exception, Dr. Cullen's definition of intermitting and remitting fevers appears to be extremely good, and ſufficient, we ſhall find, without the objectionable part to diſtinguiſh the fevers arranged under it. It is ſimple and ſhort, and at once directs the attention to the leading features of the diſeaſe. The ſpecies and varieties of this order I ſhall preſently have occaſion to conſider at ſome length.

The ſecond order of idiopathic fevers, that is, the ſecond ſection of Dr. Cullen's firſt order of the Pyrexiæ, (continued fever) he defines, " Febres ſine intermiſſione, nec " miaſmate paludum ortæ, ſed cum remiſſionibus et exacer- " bationibus, parum licet notabilibus, perſtantes, paroxyſmis " quovis die binis."

The latter part of this definition, " paroxyſmis quovis die " binis," muſt be regarded as exceptionable, this circumſtance being ſeldom diſtinctly obſerved in continued fevers.

Dr. Cullen obſerves, that ſince continued fevers conſiſt of repeated paroxyſms, it may ſometimes be difficult to diſtinguiſh them from remitting fevers; and this difficulty may ſeem increaſed by the change I have propoſed in his definitions. The truth is, that theſe two kinds of fever run into each other. The only difference, which can be ſpecified between remitting and continued fever, is that of the degree and length of their remiſſions. There is no ſymptom of the one, which does not occaſionally attend the other. In this, however, and ſimilar difficulties, we ſhall find, that when the ſymptoms of two diſeaſes imperceptibly run into each other, the ſame is true of the modes of practice ſuited to them; ſo that a perfect diagnoſis between them is unneceſſary, for noſology derives all its importance from its being ſubſervient to practice.

The ancients (Dr. Cullen remarks) mention fevers, in which there was no appearance of remiſſions throughout their whole courſe. Such, however, are ſeldom if ever obſerved. It is therefore to fevers with ſlight remiſſions, that we apply the term continued.

Continued fevers have long been divided into acute and chronic; and many diſputes have ariſen concerning this diviſion. In acute fevers the ſymptoms are more violent than in chronic, and the diſeaſe is ſooner terminated. Some have

confined the term acute, to those fevers which terminate before or on the twentieth day. Others extend this period to sixty days; and Galen divides the acute fevers into acute, which extend to any day between the seventh and the twentieth day; and peracute, which terminate before or on the seventh. The peracute he subdivides into exactly peracute, which are not protracted beyond the fourth day; and not exactly peracute; which extend to the seventh. The acute he in like manner subdivides into, exactly acute, which terminate on the fourteenth day; and not exactly acute, which are protracted to the twentieth. All these days, we shall find, were regarded by the ancients as chief critical days.* These divisions are altogether arbitrary, and of no use in practice.

The division of continued fever into Inflammatory and Nervous, or, as they have been termed, Synocha and Typhus, is one of more consequence, and at present more generally adopted by physicians. It points out the only species of continued fever, which can be well defined; and greatly assists us in laying down the mode of treatment in this varied disease.

The following is Dr. Cullen's definition of Synocha, "Calor plurimum auctus, pulsus frequens, validus, et durus, "urina rubra, sensorii functiones parum turbatæ." Many objections might be made to this definition, but it would be difficult to give a better. In forming it, Dr. Cullen chiefly kept in view the circumstances which distinguish this species of fever from the Typhus; and he rather gives the symptoms of the more strongly marked cases of Synocha, than of Synocha in general.

The same observation applies to the definition of Typhus.

* Days on which the great changes of fevers most frequently happen.

"Morbus contagiofus, calor parum auctus, pulfus parvus, "debilis, plerumque frequens, urina parum mutata, fenforii "functiones plurimum turbatæ, vires multum imminutæ."—Nor does it feem poffible to avoid this inaccuracy, fince as Synocha and Typhus infenfibly run into each other, it is only in the more ftrongly marked cafes, that they can well be diftinguifhed.

A fimple Synocha or Typhus is a fever which we rarely, if ever, meet with. For however high the inflammatory fymptoms at an early period, thofe of Typhus always, at leaft in this country, fooner or later fupervene; and however well marked the fymptoms of Typhus may be in the progrefs of fever, in almoft every cafe the firft fymptoms are more or lefs inflammatory.

On this account Dr. Cullen makes a third fpecies of continued fever, which he terms Synochus; and defines, "Mor-"bus contagiofus, febris ex Synocha et Typho compofita; "initio Synocha, progreffu, et verfus finem, Typhus."

The fevers mentioned by authors, under the names Synocha and Typhus, are in fact no other than varieties of the Synochus. When the fymptoms of debility predominate, the fever has been termed Typhus; when the inflammatory fymptoms are moft remarkable, and prefent through the greater part of the difeafe, it has been called Synocha.—Thefe varieties of continued fever fo run into each other, the difference feeming often to depend on adventitious circumftances, that they may properly be confidered as one difeafe; wonderfully varied indeed, but between the varieties of which no well marked line can be drawn.

There are other varieties of continued fever, however, which in fome refpects are better marked. Eruptions of different kinds often appear in this difeafe; and as they feem to modify its fymptoms, or at leaft, as each particular erup-

tion is moſt apt to ſhew itſelf when a certain train of ſymptoms is preſent, they may ſerve to diſtinguiſh ſome varieties of it.

When phyſicians became acquainted with the Exanthemata; when they had obſerved that a certain train of febrile ſymptoms is always followed by an eruption of a particular kind, and that every one infected by a perſon labouring under ſuch a fever is ſeized with the ſame train of febrile ſymptoms, followed by the ſame eruption, they ſeem to have inferred, that wherever an eruption occurs in continued fever, preceded by, or attended with, a particular train of febrile or other ſymptoms, the diſeaſe is an Exanthema; that it is of a nature different from that of a common continued fever; and that when communicated from one perſon to another, it would always be attended with its peculiar ſymptoms and eruption, as happens in the ſmall-pox and measles. Thus they regarded the Petechial fever, thus they ſtill regard the Miliary, the Aphthous, and ſeveral other varieties of fever, as Exanthemata.

A more particular attention to theſe diſeaſes has long ago (at leaſt in this country) convinced phyſicians of their error, with reſpect to the Petechial fever; and they begin to ſuſpect it with reſpect to ſeveral others, which noſogoliſts at preſent claſs with the Exanthemata. Let us conſider the pretenſions of each of thoſe to the place it holds in our ſyſtems of noſology.

Although Dr. Cullen gives the Miliary fever a place among the Exanthemata, he expreſſes his doubts whether it properly belongs to this order; or I may rather ſay, he adduces ſufficient arguments to prove that it does not.

"Inter medicos, ſpeciatim Viennenſes, de indole morbi miliaris nuper acriter diſputatum eſt; et imprimis an unquam idiopathicus, an vero ſemper ſymptomaticus ſit, certatim

quaeritur. Quod nunquam idiopathicus fit, præter opinionem medicorum, a medio ſeculi decimi ſeptimi in hunc fere diem, omnium, et contra ſententiam medicorum hujus ævi quorundam ſpectabilium, affirmare non auſim; ſed cum experientiam in hac re ſaepe fallacem, at medicos pleroſque imitatorum ſervum pecus fuiſſe noverim, dubitare cogor; et, utcunque ſit, morbum miliarem plerumque ſymptomaticum fuiſſe, ex obſervatione propria, per multos annos frequenti, certo novi. Nunquam contagioſum, nec manifeſto epidemicum, quibuſdam licet temporibus ſolito frequentiorem, vidi. Morbis febrilibus quibuſcunque, tum inflammatoriis tum putridis, aliquando adjungitur; in nullis tamen, niſi regimine calido et ſudoribus praeuntibus, ortum, et in pluribus, regimine temperato, et ſudoribus vitatis, morbum, alias expectandum, prorſus vitatum obſervavi. In quibuſdam corporis partibus quaſi arte excitatum aliquoties novi. Denique, cum contagionum ſpecificarum plerarumque indolem materia, ſi qua datur, miliaris nequaquam imitetur, tum quod certo morbi die eruptionem non efficiat, tum quod non ſemel tantum, ſed ſaepius in vitae decurſu, hominem afficiat.* De hujus igitur materiae natura ſpecifica, vel ad morbum quemvis idiopathicum gignendum apta, valde dubito. In hac re mecum ſentientem experientiſſimum et peritiſſimum CAROLUM WHITE habere mihi gratulor. Vide *White* on the Management of Lying-in Women."†

Dr. Cullen, to overcome the difficulty as far as poſſible, conſiſtently with the place it holds in his noſology, divides the miliary fever into two varieties, the idiopathic and ſymp-

* The miliary fever is even most apt to attack those who have formerly laboured under it. See Vogel de Cog. et Cur. Morb.—I know a woman who is subject to this eruption in almost every indisposition under which she labours.

† See Cullen's Synop. Nos. Meth. genus 32.

tomatic. The former, he confeſſes, he mentions, not from his own obſervations, but thoſe of foreign writers. All the caſes of miliary fever which he himſelf ſaw, he refers to the latter variety.*

But I have found no facts in the writings of any foreign author who treats of the miliary fever, capable of warranting this diviſion, or of ſetting aſide Dr. Cullen's mode of reaſoning with reſpect to any of the caſes of which they give an account.†

The miliary eruption has doubtleſs now and then attended the prevailing fever; but ſo have Petechiæ. A variety of

* It is when the miliary eruption is of that kind which has been called the white miliary eruption, that the disease is supposed to have the best claim to be considered an Exanthema; but its claim seems no better founded than that in which the red miliary eruption appears; both kinds frequently appear on the same patient at the same time.

† The principal foreign authors I allude to are Hoffman in his Opera Physico-Medica, Van Swieten in his Comment. in Aph. Boerhavii, Lieutaud in his Synopsis Praxeos Medicinæ, De Aaen in his Ratio Medendi, Burserius in his Institutiones Medicinæ Practicæ, Vogel in his work de Cog. et Cur. Morb. Quarin in his excellent work de Febribus, Allionius in his treatise de Miliarium Origine, and Planchon in his work de la Fievre Miliaire. The following works also, Welsch de Novo Puerper. Morbo, Fantonus de Febre Miliare, Fischer de Febre Miliare, Gastallier sur la Fievre Miliaire des Femmes en Couche, have found their way to this country, but I have not been able to meet with them. I was the less anxious to procure these treatises, as I found, after perusing what is said of the miliary fever by a few of the authors just mentioned, there was little to be met with in the works of others but a repetition of the same observations. It must always happen that after six or eight authors, who have been conversant with a disease, have given a copious account of it, few important facts relating to it will remain to be mentioned by others.

circumſtances, improper treatment for inſtance, (and we have reaſon to believe that this is the circumſtance which has moſt frequently operated) may render the inhabitants of any particular neighbourhood ſubject to the miliary eruption, while labouring under fever. Can we ſuppoſe any thing peculiar in the fever produced by a fractured limb? Yet caſes of this kind are often attended by the miliary eruption. In what fever does it appear ſo frequently as in the Puerperal, between which and the Exanthemata there is ſurely very little analogy? This eruption, in ſhort, appears in all febrile diſeaſes, when its peculiar cauſes happen to have been applied. It appears in the Exanthemata, the Phlegmaſiæ, the Hæmorrhagiæ, and Profluvia, as well as in fevers properly ſo called; nay its appearance we ſhall find is not even confined to febrile diſeaſes. It ſeems to be nothing more than an accidental ſymptom, which is moſt apt to occur in fever, but may appear in any diſeaſe whatever. And, like Petechiæ, it alſo ſometimes appears unaccompanied by any other diſeaſe.*

There are nearly the ſame reaſons for rejecting the Aphthous, as the miliary fever, from the number of the Exanthemata. "I doubt, (ſays Dr. Cullen) whether or not the "Aphthæ ought to be arranged under the Exanthemata. "Moſt caſes of Aphthæ which I have ſeen (he obſerves) "appeared without fever; and if at any time a fever did "attend the Aphthæ infantum, the former generally ſuper-"vened upon the latter. A fever indeed (he continues) "does accompany the Aphthæ of adults, but this fever is of "no particular kind, and the Aphthæ generally appear to-"wards its termination; nor as far as I know is there any

* See Huxham on Fevers, White on the Diseases of Lying-in Women, Burserius Institutiones Medicinæ Practicæ, &c.

"fever well defined, or even mentioned by medical writers, "which conſtantly attends Aphthæ."

The Aphthæ infantum is an idiopathic affection, and this form of the diſeaſe has ſometimes appeared in adults.* But a diſeaſe unattended by fever does not certainly belong to the order of Exanthemata. We have to conſider how far thoſe caſes in which Aphthæ appear in fever deſerve a place in this order.

I have just quoted Dr. Cullen's obſervation, that Aphthæ do not appear in a fever diſtinguiſhed by any particular ſymptoms, as the eruptions in the Exanthemata are obſerved to do.† They appear in all kinds of fevers, in the ſymptomatic, as well as the idiopathic. In many of the former indeed they are more common than in the latter. Sydenham declares, that there is no diſeaſe in which he found Aphthæ ſo common as in dyſentery, and in thoſe fevers on which dyſentery had ſupervened. We know that this affection is one of the moſt common forerunners of death in Phthiſis, &c. With what propriety then are Aphthæ ranked among the Exanthemata? We ſhall even find, when we come to conſider them more particularly, that, when attended by common continued fever, they can generally be traced to cauſes different from thoſe which produce the fever in which they occur; very frequently to affections of the primæ viæ, or ſuppreſſed ſweats.

* Cases of this kind are mentioned by Boerhaave, by Ketelaer in his Treatise de Aphthis nostratibus, Arneman in his Commentatio de Aphthis, and others. Such cases, however, are extremely rare. Van Swieten lived for many years in a country where Aphthæ were very common, yet he never saw a case of Aphthæ in an adult not labouring under fever; and Dr. Cullen makes the same observation with respect to his own experience.

† Certain symptons indeed generally precede all eruptions; but in the cases we are at present considering, the attending symptoms

Dr. Cullen has alſo expreſſed his doubts reſpecting the propriety of ranking the Eryſipelas among the Exanthemata; and regards the ſpecies which have been termed Eryſipelas peſtilens and Eryſipelas contagioſum, as nothing more than Typhus attended by an Erythematic inflammation.

All the arguments urged for the excluſion of the miliary fever from the Exanthemata, ſeem equally ſtrong when applied to the Eryſipelas: it is not a contagious diſeaſe; the eruption often appears, indeed, like thoſe juſt mentioned, in contagious fevers, but it is not neceſſarily communicated with ſuch fevers. Like the miliary eruption, it appears in various kinds of fever, in the ſymptomatic as well as idiopathic. External warmth and irritation are capable of producing the Eryſipelas in the prediſpoſed, as well as the miliary eruption. There is no particular period of the fever at which the Eryſipelas ſhews itſelf; and with regard to its recurrence, it is even moſt apt to attack thoſe who have formerly laboured under it.

We ſhall afterwards find, that there is another diſeaſe, in which the ſame kind of inflammation appears as in the Eryſipelas, termed by Sauvages and Cullen (for other authors we ſhall find have uſed the word in a very indefinite ſenſe) Erythema. The difference between the Eryſipelas and Erythema is, that in the former, the inflammation ſupervenes on a fever; in the latter, the inflammation is the primary affection, and the fever merely its conſequence. The Eryſipelas ſeems to be nothing more than an Erythema, ſupervening

appear occasionally in all kinds of fevers, and at all periods of them. Whereas in the true Exanthemata, the fever from its commencement is of a peculiar kind, at least attended with peculiar symptoms.

on any kind of continued fever; and as ſuch I ſhall conſider it along with the other eruptions which appear in theſe fevers.*

The diſeaſe I am now ſpeaking of is Dr. Cullen's firſt

* I have arranged the Erysipelatous fever among the varieties of Synochus, because, like those just mentioned, it has been arranged among the Exanthemata; but if the view I have here taken of it be just, and that it is so will I think more fully appear when we come to speak of its treatment, it should have no place in a system of nosology, since it is a combination of a Phlegmasia and continued fever; and it is of the combinations of symptoms, not of diseases, that nosology treats. It may be said indeed, that as all the eruptions we have been considering, occasionally appear unaccompanied by any other disease, the same objection holds against admitting the other varieties of Synochus into a nosological system. And this cannot be denied. But most of these eruptions appear so rarely as a distinct disease, and their appearance in continued fever, or rather the causes which produce them, so modify many of its symptoms without altering the nature of the fever, as we shall find the appearance of the Erythematic inflammation generally does, that it is useful in practice to regard those combinations as single diseases. The most methodical arrangement in a system of nosology is not always the most useful: for another proof of which I may refer to what was said of the definitions of Synocha and Typhus, in which we introduce symptoms not essential to these diseases, in order to draw a line of distinction which nature has not made, because the division is useful in the practice in fevers, and still more so in teaching the principles of that practice. It was to such circumstances I alluded, when it was observed that a perfect system of nosology is not to be expected. Although, for the reasons just given, I have arranged the Erysipelatous fever as a variety of the Synochus, yet we shall find on considering it more particularly, that it will be necessary to defer entering fully into its treatment till I come to speak of the Phlegmasiæ; because it partakes so much of the nature of a Phlegmasia, that the principles, on which the practice in idiopathic fevers is conducted, will not apply to it.

ſpecies of Eryſipelas, (the Eryſipelas veſiculoſum); the diſeaſe which he arranges as a ſecond ſpecies of this diſeaſe, differs from it conſiderably. This he terms the Eryſipelas Phlyctænodes It is the ſame which is termed by Pliny, Zoſter; by Hoffman, Zona ignea; in Engliſh the Shingles:* it is certainly not very properly regarded as a ſpecies of Eryſipelas; nor does its place in a ſyſtem of noſology ſeem well aſcertained.

Sydenham alſo ranks as a ſpecies of Eryſipelas, the diſeaſe termed Urticaria, (Dr. Cullen's 53d genus). This however we ſhall find differs eſſentially from Eryſipelas, and ſeems to have a better claim to be regarded as an Exanthema.

Another diſeaſe to be regarded in nearly the ſame light with the foregoing, is the Pemphigus, or veſicular fever. There is no particular kind of fever in which the eruption appears; there is no particular period of the fever at which it ſhews itſelf. Dr. Cullen ſays it appears on the firſt, ſecond, or third day; Sauvages obſerves that it ſometimes appears on the fourth; and Dr. Dickſon,† who ſeems to be better acquainted with the diſeaſe than either of theſe authors, declares it may appear on any day.

The caſes related by Salabert, in his Obſervations des Fievres Inflammatoires, are evidently caſes of common continued fever, in which the veſicular eruption proved critical.

* See an account of this disease in the 2d vol. of Burserius's Inst. Med. Prac. in Schroeder de Feb. Erysip. in his Opusc. Med. in Vogel's Prælect. Acad. de Cog. et Cur. Morb. and Smith's Essay on the different Species of Inflammation, in the 2d vol. of the Med. Communications; see also Russel de Tabe Gland. p. 124.

† See Observations on Pemphigus, by Dr. Dickson, Prof. of Medicine in the University of Dublin, in the Transactions of the Royal Irish Academy for 1787.

The celebrated Morton, the contemporary and rival of Sydenham, takes notice of this diſeaſe, but without particularly deſcribing it. The name by which he calls it, however, ſeems to imply that he regarded it merely as a ſymptomatic affection, "Febris Synocha cum veſiculis per "pectus et collum ſparſis."

Dr. Cullen was but little acquainted with the Pemphigus, as appears both from what he ſays in a note, and from the definition which he gives of it, the moſt exceptionable perhaps in his noſology; yet the knowledge he had of it led him to doubt of its being an idiopathic affection. And all that Berſerius ſays in favour of its being ſo is, that we muſt at leaſt allow thoſe caſes to be idiopathic, in which the eruption is unattended by fever. This, he obſerves, frequently happens. I have ſeen three or four caſes of this kind.*

Like the foregoing, it is not confined to continued fever. We have a remarkable inſtance in which it accompanied a Phlegmaſia (the Cynanche Maligna) in the Pemphigus Helveticus, of which there is an account in the Acta Helvetica by Dr. Langhans. Much difference of opinion has ariſen among phyſicians reſpecting the nature of the diſeaſe deſcribed by Dr. Langhans, from their not admitting the veſicular eruption to be merely ſymptomatic; for, this granted, the difficulty is removed; we know that ſymptomatic eruptions appear in all kinds of fever, whether idiopathic or not.

I may alſo add, that the veſicular eruption, like ſome of the other ſymptomatic eruptions, (Aphthæ, for inſtance) is not confined to the skin, but often attacks the œſophagus,

* See one related by Dr. Winterbottom, in the 3d vol. of Medical Facts and Observations, p. 10.

ſtomach, and inteſtines; a circumſtance which has not been obſerved of any of the eruptions of the true Exanthemata.* There is every reaſon to believe, indeed, that all the ſymptomatic eruptions, as well as the Aphthous and Veſicular, occaſionally attack the ſtomach and inteſtines. That the Eryſipelatous eruption does, appears from what Dr. Cullen ſays of Gaſtritis and Enteritis. I have myſelf ſeen this eruption ſpread from the mouth and fauces to the ſtomach, and prove fatal. Of the miliary fever, Vogel obſerves, that the peculiar pricking felt in the ſkin when the miliary eruption is coming out, is alſo frequently at the ſame time felt in the inteſtines. And with reſpect to the petechial eruption, from what we know of its nature, there is every reaſon to believe that it may appear wherever there is a lining of cuticle.

The diſeaſes we have been conſidering then, the Petechial, Miliary, Aphthous, Eryſipelatous, and Veſicular fevers, are to be regarded merely as varieties of continued fever. After treating of continued fever in general, I ſhall conſider each of them ſeparately; that is, I ſhall point out the forms of continued fever in which theſe different eruptions moſt frequently appear, the peculiar ſymptoms which generally attend them, the cauſes which produce them, and the change which their appearance renders neceſſary in the treatment of the fevers in which they occur.

Petechiæ, it may be ſaid, are improperly claſſed among theſe eruptions; being merely a ſymptom of debility, the conſequence of morbid tenuity of the blood, and relaxation

* It was once supposed that the small-pox was apt to attack the intestines; but since the publication of Cotunnius's Treatise, de Sede Variolarum, this is generally admitted to have been a mistake.

of the veſſels. This, however, does not ſeem to be preciſely the caſe; other circumſtances than the preſence of debility are requiſite for their appearance. It often happens in Typhus, even where the debility is extreme, that no Petechiæ appear; this was the caſe, for inſtance, in the jail fever of Wincheſter, deſcribed by Dr. C. Smith; it is very frequently the caſe in the plague. Beſides, Petechiæ are often obſerved where there are no ſigns of debility whatever.—Grant in his Treatiſe on the Fevers moſt common in London, Eller in his Obs. de Cog. et Cur. Morbis, and others, relate caſes in which Petechiæ attended well-marked Synocha.

The ſecond order of Idiopathic fevers then comprehends Synocha and Typhus, or the Synochus (for Synocha and Typhus are rather to be regarded as different ſtages of the Synochus, than different diſeaſes) and its varieties, viz. the Synochus Petechialis, the Synochus Miliaris, the Synochus Aphthoſus, the Synochus Eryſipelatoſus, and the Synochus Veſicularis; the definitions of which will be conſidered when I come to ſpeak of theſe varieties ſeparately.

The third order of Idiopathic fevers comprehends the Exanthemata properly ſo called. The Exanthemata form the third order of Dr. Cullen's Pyrexiæ, and are defined by by him, "Morbi contagioſi ſemel tantum in decurſu vitæ "aliquem afficientes; cum febre incipientes, definito tem-"pore apparent phlogoſes, ſæpe plures, exiguæ, per cutem "ſparſæ."

"Semel tantum in decurſu vitæ aliquem afficientes," though not ſtrictly true of any of the Exanthemata, and certainly very far from being true of ſome of them;* yet as ſo much

* The plague is generally admitted to attack the same person repeatedly; and there are many well-authenticated instances on record

more characteriſtic of the true Exanthemata than of other eruptive fevers, ſeems properly admitted as part of the definition.

I have already offered my reaſons for rejecting from this definition the term Phlogoſes; in the place of which I ſhall uſe Puſtulæ, which we muſt ſuppoſe to have been arranged, and conſequently defined, among the Locales, which I have endeavoured to ſhew ſhould form the firſt claſs of diſeaſes.

The following then may be adopted as the definition of the third order of idiopathic fevers: Morbi contagioſi ſemel tantum in decurſu vitæ aliquem afficientes, cum febre idiopathica incipientes, definito tempore apparent puſtulæ, ſæpe plures, exiguæ, per cutem ſparſæ. Under this order are arranged the Variola, the Varicella, the Rubeola, the Scarlatina, the Peſtis, and the Urticaria.

The claſs of ſymptomatic fevers comprehends the three remaining orders of Dr. Cullen's Pyrexiæ, namely the ſecond, fourth, and fifth, the Phlegmaſiæ, Hæmorrhagiæ and Profluvia, and may be defined,

Morbi locales primarii calore aucto, pulſu frequente.

On the arrangement of this claſs of diſeaſes, a few words will be ſufficient; but it will be neceſſary to premiſe ſome obſervations on that of the local affections which characteriſe them, and which ſometimes appearing unaccompanied by any other diſeaſe, ſhould have a place in a ſyſtem of noſology.

of all the other Exanthemata attacking the same person a second or third time, or oftener. See Burserius's Inst. Med. Prac. Rosen in Haller's Disput. ad Morb. Hist. et Cur. Per. &c.

Of the local Affection of the PHLEGMASIÆ.

Simple inflammation is of two kinds, the one vulgarly termed a pimple, the other a ſtain, blotch or efflorescence.—Neither is included in Dr. Cullen's noſology. The former is different from his Phlegmon, the latter from his Erythema, both of which are febrile diſeaſes. In the noſology of Sauvages pimples are mentioned in the definition of the Efflorescentiæ, the ſecond order of his firſt claſs, Vitia. The definition of the order is, "Tumores humorales exigui gregales, vel cutis elevatio per puſtulas, papulas, phlyctænas varos, ſimileſve aſperitates." After giving this definition, Sauvages begins to explain the terms employed in it, demonſtrating the imperfection of his arrangement, ſince puſtules are not always ſymptomatic; Sagare makes them a genus.—They are defined by Sauvages, "Phyma parvulum apice ruptum." I ſhall adopt the term puſtule from Sauvages, but not its definition for reaſons which will readily ſuggeſt themſelves, as we proceed.

With reſpect to the other ſpecies of ſimple inflammation, it is more difficult to find a technical name for it, which ſhall be unobjectionable. Such confuſion of terms has crept into this part of medicine, that there are no leſs than three different affections known by the ſame names, and for each of which at leaſt two names have been uſed. Before we can ſpeak of theſe diſeaſes, it is neceſſary to know the meaning of the terms we employ. A chronic inflammation of the ſkin, never occaſioning fever, is called by ſome writers Erythema, by others Eryſipelas, and by ſome the terms are uſed indiſcriminately.—The ſame terms have been applied often with as little diſcrimination to another inflammation of the ſkin, which is a febrile

diſeaſe. This diſeaſe, (that is the inflammation and the fever it occaſions), ſometimes ſupervenes on ſimple fever, and to this combination, which I have already had occaſion to mention, and which we ſhall afterwards conſider at length under the name of Synochus Eryſipelatoſus, the ſame terms Eryſipelas, and Erythema have been applied.

Dr. Cullen, following Sauvages, confines the term Erythema to the diffuſe cuticular inflammation occaſioning fever. By the term Eryſipelas, we have ſeen, he expreſſes the combination of Erythema with ſimple fever; and with reſpect to ſimple Inflammation, as there is no place for it in his noſology, he gives it no name. He has found much difficulty in his ſyſtems, both of noſology and practice, in diſtinguiſhing the Eryſipelas and Erythema, and in the latter he is forced into a mode of arrangement which makes this difficulty conſpicuous; for finding that in Eryſipelas, the ſymptoms which precede the inflammation of the trunk and extremities are often hardly or not at all to be perceived, ſo that the diſeaſe has little or no appearance of an Exanthema, but that the preceding ſymptoms are generally conſiderable if the inflammation is about to appear on the face and head, the cauſe of which will be evident when we come to ſpeak of Eryſipelas; in treating of the diſeaſe he conſiders this caſe alone, "I ſuppoſe," he obſerves, "the Eryſipelas to depend on a matter generated within the body, and which "analogous to the other caſes of Exanthemata, is in conſequence of fever thrown out on the ſurface of the body. "I own it may be difficult to apply this to every particular "caſe of Eryſipelas, but I take the caſe in which it is generally ſuppoſed to apply, that of the Eryſipelas of the "face, which I ſhall therefore conſider here." He thus refers other caſes of the diſeaſe, if they are conſidered at all, to the order of Phlegmaſiæ, ſo that if the inflammation in

Eryſipelas appears on the head, the diſeaſe is an Exanthema, if on the trunk and extremities, a Phlegmaſia.* Can this view of the ſubject be correct? Beſides how ſhall we arrange the caſes, in which the inflammation appears on the head without being preceded by any febrile ſymptom, for ſuch we ſhall find occur. The queſtion then ſtill remains, how are we to diſtinguiſh the diſeaſes termed by Dr. Cullen, Eryſipelas and Erythema, for it is abſolutely neceſſary to diſtinguiſh a diſeaſe evidently referable to the Phlegmaſiæ, and in which the mode of treatment, we ſhall find, is the ſame as in the other Phlegmaſiæ, the fever being ſymptomatic; from the Eryſipelas of Dr. Cullen, in which the fever is idiopathic, and muſt, as experience has taught, be treated as ſuch, except as far as it has been modified by the appearance of the local affection.

The only way, as far as I can judge, to remove all difficulty is to give a name to the ſimple inflammation, which is unattended by fever, and to the phlegmaſia, the Erythema of Dr. Cullen, regarding his Eryſipelas as a combination of this diſeaſe and fever, which never aſſumes the appearance of an Exanthema, and to which there is no good reaſon for aſſigning any name, we might as well give a name to the combination of Erythema, and worms. According to this view of the ſubject, I ſhall term the ſimple inflammation Erythema, and the phlegmaſia, Eryſipelas; the latter term will then be confined to the caſes in which the local affection is preceded either by no ſymptoms of general derangement, or by ſuch as frequently precede the local affection in the other phlegmaſiæ.

In looking over the noſological ſyſtem of Sauvages, Linnæus, Vogelius, Sagare, Mc. Bride, and Cullen, we find the ſecond ſpecies of ſimple inflammation mentioned as a genus

* See Dr. Cullen's observations on Erythema, in his First Lines.

only by Sagare. The Bacchia of Linnæus, Encaufis of Vogelius, and Pfydracia of Sauvages, feem to include it but not very accurately.

Sagare terms it Bacchia, it is his ninth genus and the fourth of the order, *Efflorefcentiæ*. The following is the definition of the genus, which is as readily underftood without as with that of the order. "Maculæ rubræ vel efflorefcen-
" tiæ nafi et partium adjacentium eidem, guttatæ, plus mi-
" nus prominentes, afperæ furfurafcentes, diuturnæ; hoc ge-
" nus ambigit inter maculas et efflorefcentias."

This definition does not very accurately apply to the inflammation we are fpeaking of, in which the furface is uniformly fmooth. Such an inflammation, as Sagare here defcribes, frequently occurs, but were we to rank as a diftinct genus, every cutaneous inflammation which in any refpect differs from every other, inftead of two we might have fifty difeafes of this kind. Our intention in a general fyftem of Nofology, is fully anfwered by dividing fimple inflammations into two fpecies which comprehend all the others, if indeed there are any others well defined.

The Puftule and the Erythema, are diftinguifhed in the following manner.

In the former there is an evident fwelling rifing in the fhape of a cone, the apex of which is fooner or later formed into a fmall cavity, filled with yellow matter called pus.—In the Erythema there is no fwelling of this kind, although fome general fwelling of the part it occupies is always more or lefs obfervable; the furface is uniformly fmooth, there is no fudden elevation of the cuticle and pus is never formed. Of both, rednefs is a characteriftic fymptom, but in the former it extends only to the little cone, and a fhort way around its bafe; in the other it is more diffufe, frequently fpreading over the face and hands, the parts moft frequently occupied

by it, in a perfectly uniform manner. In both, the temperature is increaſed. They alſo agree in being frequently attended with ſome degree of pain, although this is by far the leaſt conſtant ſymptom. In the Puſtule it is more obtuſe and pulſatory, in the Erythema often ſtinging.

All inflammations then, for as I have juſt had occaſion to obſerve, they are all included in theſe, agree in being attended with redneſs, increaſed temperature, pain and ſwelling.—Theſe Symptoms may therefore be aſſumed as the character of ſimple inflammation, forming an order of the Claſs Locales. "Notæ vero inflammationis," Celſus obſerves, "ſunt "quatuor, Rubor et Tumor cum Calore et Dolore." The genera arranged under this order then are the Puſtule and the Erythema, the former may be defined,

Inflammatio tumore circumſcripto, in faſtigium elevato, ſæpe in apoſtema abeunte.—The latter,

Inflammatio rubore uniformi ſerpente, tumore partis ſæpe vix evidente.

As ſpecies of theſe ſhould be arranged, (as has been obſerved above,) ſome diſeaſes which Dr. Cullen, from the want of ſuch an order, arranges among the Pyrexiæ.

The local affection in the Phlegmaſiæ, we ſhall find, does not differ in its nature, but only in degree, and the parts of the body it occupies, from ſimple inflammation.

Of the Local Affections of the HÆMORRHAGIÆ *and* PROFLUVIA.

The local affections of theſe, as of the Phlegmaſiæ, occaſionally appear unaccompanied by fever. The local affection of the one conſiſts of a flow of blood, of the other of an increaſe of ſome colourleſs ſecretion; and it is common, whether fever attend or not, to call the diſeaſe hæmorrhagy, catarrh, &c.

In a ſtrict noſological point of view, however, the ſame obſervations apply to theſe affections as to Inflammations.—They frequently exiſt without fever, and ſhould therefore have appellations, and a place in noſological ſyſtems to diſtinguiſh them from febrile diſeaſes; and when the reader is informed, that the plan of treatment when they are, and are not febrile diſeaſes, is very different, he will be ſurpriſed that this diſtinction has not been generally made.

To avoid the introduction of new terms, I ſhall uſe Hemorrhagy and Profluvium to expreſs the local affections, and to expreſs the more complicated diſeaſes, Febrile Hemorrhagy and Febrile Profluvium. Theſe local affections belong to the fourth order of Dr. Cullen's laſt claſs, Locales, which I have given my reaſons for thinking ought to be the firſt in a ſyſtem of noſology. The order termed Apocenoſes is defined, "Fluxus ſive ſanguis aut humores alii, ſolito "uberius profluens, ſine pyrexia, impetuve fluidorum aucto."

Hemorrhagy is his firſt genus which he terms profuſio, and defines "Fluxus ſanguinis." For the local affection which I term profluvium, he has no given term, his mode of arrangement not requiring ſuch a term. He arranges its different ſpecies as genera. It may be defined, Excrétio aucta naturaliter non rubra.

Such are the obſervations which it ſeemed neceſſary to premiſe reſpecting the local affections of ſymptomatic fevers, previous to conſidering the definitions and noſological arrangement of thoſe diſeaſes.

Dr. Cullen's definition of the firſt order of ſymptomatic fevers, the Phlegmaſiæ, (the ſecond order of his Pyrexia), has been given.

According to the arrangement I have adopted, this defini-

tion muſt be made to include that of the claſs of which it is an order; and I think there are ſeveral reaſons for rejecting the latter part of it, namely, "Sanguis miſſus et jam concretus ſuperficiem coriaceam albam oſtendens." The appearance of the buffy coat on the blood does not, we ſhall find, uniformly indicate the preſence of inflammation. Beſides, although it were a certain diagnoſtic, it ſhould not enter into a noſological character, becauſe its exiſtence can only be aſcertained after we have preſcribed the remedy. I have already given my reaſons for rejecting the term Phlogoſis.

But as the other parts of the character are not always, though generally, ſufficient for diſtinguiſhing the diſeaſes arranged under it, I would propoſe, inſtead of ſanguis miſſus, &c. to inſert pulſus durus, which at leaſt as conſtantly attends the Phlegmaſiæ, as the buffy coat of the blood. Febris Synocha is alſo perhaps exceptionable, as we ſhall find that in certain ſpecies of Phlegmaſiæ, the fever is Typhus; for example, in the Pneumonia Putrida of foreign authors, and the Cynanche Maligna. In the Gaſtritis and Enteritis too, notwithſtanding a degree of hardneſs in the pulſe, the fever certainly partakes more of the nature of Typhus than of Synocha. There is an evident inaccuracy in admitting Synocha into the definition of an order, when we find it neceſſary in ſeveral of its genera to call the fever Pyrexia typhodes. As far as I can judge, pulſus durus anſwers every purpoſe which Synocha can ſerve, in this definition, and it ſeems proper for other reaſons that pulſus durus ſhould form a part of it.

I would propoſe the following definition of the Phlegmaſiæ: Febres ſymptomaticæ, pulſu duro; quibus eſt pro morbo locali, vel inflammatio externa, vel dolor topicus ſimul læsâ

partis internæ functione. Still ſuppoſing ſimple inflammation to have been defined in the claſs Locales.*

The Hæmorrhagiæ (the fourth order of Dr. Cullen's Pyrexiæ) form the ſecond order of ſymptomatic fevers.

"Sanguis miſſus ut in Phlegmaſiis apparet," cannot here be objected to, for the ſame reaſon that "Sanguis miſſus et jam," &c. was omitted in the laſt definition. But as the buffy coat is not always obſerved in Hemorrhagies, and indeed may be regarded as belonging only to a particular ſpecies of them, as its degree is regulated by a variety of accidental circumſtances, and as the definition, without this addition, is ſufficient to diſtinguiſh the diſeaſes arranged under it, it ſeems better to omit it. It is alſo neceſſary to alter the definition, in order to ſuit it to the general mode of arrangement I have adopted. It may be expreſſed in the following manner, Febres ſymptomaticæ, quibus eſt pro morbo locali, sanguinis fluxus abſque vi externa.

The definition of the Profluvia, the third and laſt order of ſymptomatic fevers, (the laſt order of Dr. Cullen's Pyrexiæ) requires no farther alteration than the mode of arrangement I follow renders neceſſary; Febres ſymptomaticæ, quibus eſt pro morbo locali, excretio aucta naturaliter non rubra.†

Such is the mode of arrangement which I mean to adopt. It may be proper to preſent it to the reader at one view.

* Before entering on the consideration of the Phlegmaſiæ, it will be necessary to make some observations on the simple inflammations.

† I have changed sanguinea for rubra, because the menstrual discharge, though red, does not appear to be blood, but like all other healthy discharges, a secretion. When it is much increased, however, it seems always to be mixed with a large proportion of blood, and the disease, therefore, belongs rather to the Hemorrhagies than Profluvia.

ARRANGEMENT

OF

FEBRILE DISEASES,

AND OF THE

LOCAL AFFECTIONS,

WHICH CHARACTERISE CERTAIN SPECIES OF THEM.

CLASSIS I.

LOCALES.

ORDO I.

INFLAMMATIO.

Partis rubor et tumor cum calore et dolore.

GENUS I.

Pustula.

Inflammatio tumore circumſcripto, in faſtigium elevato, ſæpe in apoſtema abeunte.

GENUS 2.

Erythema.

Inflammatio rubore uniformi ſerpente, tumore partis ſæpe vix evidente.

ORDO II.

APOCENOSES.

Fluxus ſive ſanguis, aut humores alii, ſolito uberius profluens, ſine pyrexia impetuve fluidorum aucto.

GENUS 1.

Hæmorrhagia.

Fluxus Sanguinis.

GENUS 2.

Profluvium.

Excretio aucta naturaliter non rubra.*

CLASSIS II.

FEBRES IDIOPATHICÆ.†

Prægreſſis languore, laſſitudine, et aliis debilitatis ſignis; pulſus frequens, calor auctus, ſine morbo locali primario.

ORDO I.

FEBRES INTERMITTENTES ET REMITTENTES.

Febres idiopathicæ, miaſmate paludum ortæ, paroxyſmis pluribus, apyrexiâ, ſaltem remiſſione evidente, interpoſitâ, cum exacerbatione notabili, et plerumque cum horrore redeuntibus, conſtantes.

* I here of course, enter no farther on the Class Locales, than it is connected with febrile diseases.

† A single word would be preferable to the circumlocutions Febris Idiopathica and Febris Symptomatica, but I wished to avoid the introduction of new terms.

ORDO II.

FEBRES CONTINUÆ.

Febres idiopathicæ ſine intermiſſione, nec miaſmate paludum ortæ, ſed cum remiſſionibus et exacerbationibus, parum licet notabilibus, perſtantes.

GENUS 1.

Synocha.

Calor plurimum auctus, pulſus frequens, validus et durus, urina rubra, ſenſorii functiones parum turbatæ.

GENUS 2.

Typhus.

Morbus contagioſus, calor parum auctus, pulſus parvus, debilis, plerumque frequens, urina parum mutata, ſenſorii functiones plurimum turbatæ, vires multum imminutæ.

GENUS. 3.

Synochus.

Morbus contagioſus, febris ex ſynochâ et typho compoſita; initio ſynocha, progreſſu et verſus finem, typhus.

Species 1.

Synochus Simplex.

Species 2.

Synochus Petechialis.

Species 3.

Synochus Miliaris.

Species 4.

Synochus Aphthosus.

Species 5.

Synochus Erysipelatosus

Species 6.

*Synochus Vesicularis.**

ORDO III.

EXANTHEMATA.

Morbi contagiosi, semel tantum in decursu vitæ aliquem afficientes, cum febre idiopathica incipientes; definito tempore apparent pustulæ sæpe plures, exiguæ, per cutem sparsæ.

GENUS 1.

Variola.

GENUS 2.

Varicella.

GENUS 3.

Rubeola.

GENUS 4.

Scarlatina.

GENUS 5.

Pestis.

* The definitions of those species and of the following genera, shall be considered when I come to treat of them separately.

GENUS 6.

Urticaria.

CLASS II.

FEBRES SYMPTOMATICÆ.

Morbi locales primarii, calore aucto, pulſu frequente.

ORDO I.

PHLEGMASIÆ.

Febres ſymptomaticæ, pulſu duro; quibus eſt pro morbo locali, vel inflammatio externa, vel dolor topicus ſimul læsæ partis internæ functione.

GENUS 1.

Phlegmon.

GENUS 2.

Erysipelas.

GENUS 3.

Ophthalmia.

GENUS 4.

Phrenitis.

GENUS 5.

Otitis.

GENUS 6.

Cynanche.

GENUS 7.

Pneumonia.

GENUS 8.

Carditis.

GENUS 9.

Peritonitis.

GENUS 10.

Gastritis.

GENUS 11.

Enteritis.

GENUS 12.

Hepatitis.

GENUS 13.

Splenitis.

GENUS 14.

Nephritis.

GENUS 15.

Cystitis.

GENUS 16.

Hysteritis.

GENUS 17.

Rheumatismus.

GENUS 18.

Podagra.

ORDO II.

HÆMORRHAGIÆ.

Febres ſymptomaticæ, quibus eſt pro morbo locali, ſanguinis fluxus abſque vi externa.

GENUS 1.

Epistaxis.

GENUS 2.

Hæmoptysis

GENUS 3.

Hæmorrhois.

GENUS 4.

Menorrhagia.

GENUS 5.

Hæmatemesis.

GENUS 6.

*Hæmaturia.**

* The Hæmatemesis and Hæmaturia, regarded by Dr. Cullen as always symptomatic, are sometimes, though rarely, idiopathic. I have seen the Hæmaturia idiopathic. The Cystirrhagia (his last species of Hemorrhagy) is never perhaps idiopathic.

ORDO III.

PROFLUVIA.

Febres Symptomaticæ, quibus eſt pro morbo locali, excretio aucta naturaliter non rubra.

GENUS 1.

Catarrhus.

GENUS 2.

*Dysenteria.**

* At the end of the work we shall be enabled to take a more detailed view of that part of a nosological system which comprehends febrile diseases, when we shall have considered their definitions and varieties.

PART I.

OF IDIOPATHIC FEVERS.

IDIOPATHIC fevers, it has been obſerved in the Introduction, are diſtinguiſhed by the following ſymptoms: Languor, laſſitude, and other ſigns of debility, followed by a frequent pulſe and increaſed heat, without any primary local affection. This claſs comprehends three orders, Intermitting and Remitting Fevers, Continued Fevers, and the Exanthemata.

BOOK I.

OF INTERMITTING AND REMITTING FEVERS.

ACCORDING to the definition given in the Introduction, intermitting and remitting fevers conſiſt of repeated paroxyſms, returning with an evident exacerbation, and generally with ſhivering, complete apyrexia, or at leaſt an evident remiſſion being interpoſed. I am now to conſider the phenomena of theſe diſeaſes more fully.

CHAP. I.

Of the Species and Varieties of Intermitting *and* Remitting Fevers.

Intermitting and remitting fevers have long been divided into Quotidians, Tertians, and Quartans, that is, fevers returning every day, every ſecond day, and very third day.*

Hippocrates mentions intermittents which returned on the fifth, ſeventh, or eighth day. Boerhaave ſays he ſaw a Septenary; and Van Swieten ſaw a Quartan change to a Quintan. Many ſimilar obſervations have been made. Burſerius enumerates many authors who ſaw Quintans, Septenaries, and Octans, ſeveral who met with fevers returning on the ninth, the tenth, and even the fourteenth or fifteenth day. We alſo read of fevers which are ſaid to have returned once a month, once in two months, &c. Theſe have been termed Menſtruæ, Bimenſtruæ, &c. and ſome authors even ſpeak of fevers which returned yearly, termed Annuæ.

* The interval or period, it must be remembered, is the space of time occupied by what is called a complete revolution of the fever, that is, the time from the accession of one fit to that of the next. And when physicians talk of a Tertian, Quartan, &c. they count from the beginning of a revolution. Thus, in a Tertian, the day on which the fever appears is the first day; the next, the second; and the next, on which the fever again takes place, the third. Some confusion of names has arisen from not attending to this mode of reckoning.

For the sake of brevity I shall use the term intermitting fever to express both intermitting and remitting fever, except where the contrary is specified.

How far the obſervations of thoſe who mention fevers with ſuch intervals are accurate, it is difficult to ſay; on comparing them with the obſervations of others, we cannot help ſuſpecting their accuracy. Galen, whoſe practice was more extenſive perhaps than that of any other phyſician, never ſaw a fever with a longer interval than a Quintan, and very rarely this.* The particular ſtate of the weather at certain times of the year, by producing fever in the prediſpoſed, often gives riſe to the appearance of an annual intermittent. But in ſuch caſes the fever is of the continued kind.

In ſome intermittents the return of the paroxyſm is irregular, that is, their revolutions are not performed in equal times. Theſe are conſidered by Dr. Cullen, as varieties of the Tertian and Quartan. They have been termed Erratica Quintana, Septana, Octana, Nonana, Lunatica.†

Each intermittent has alſo been divided into Benigna, Maligna or Corruptiva, Primaria, Secondaria or Symptomatica, Periodica; Partialis, that is, affecting the body partially; Sporadica, Endemica and Epidemica. Such diviſions (as may be inferred from the meaning of the terms) are quite uſeleſs.

Certain ſymptoms, coma, for inſtance, ſyncope, convulſions, an efflorefcence on the ſkin, much ſweating, great inquietude, nauſea, vomiting, delirium, &c. have been aſſumed as a foundation for a diviſion of Intermittents; hence the names Elodes, Aſſodes, Syncopalis, &c. This diviſion alſo is quite uſeleſs.

* Even the Quintan has been suspected by later writers to be a variety of the Tertian.

† There are many fevers of this kind mentioned in the works of Etmuller, Van Swieten, De Haen, by different authors in Hallers's Disp. ad Morb. Hist. et Cur. Pert. &c.

The ſame may be ſaid of the diviſion of intermittents, founded on their being accompanied with other diſeaſes; Scurvy, Syphilis, Worms, Dyſentery, Epilepſy, Gout, &c. and of that, on the nature of the remote cauſe. There is very little room we ſhall find for any diviſion of this kind.

Of the various ſpecies of intermittents, it will be neceſſary to conſider particularly only the three firſt-mentioned, the quotidian, tertian and quartan. The others have not been accurately obſerved, very rarely occur, and are ſuppoſed by many, and not without reaſon, to be only varieties of theſe.

SECT. 1.

Of the Varieties of the TERTIAN.

IN conſidering the varieties of intermittents, it is proper to begin with the Tertian, becauſe its varieties have been better marked, and are more numerous, than thoſe of the Quotidian and Quartan. It is of ſuch frequent occurrence, indeed, that Dr. Fordyce and ſome other writers are of opinion that all fevers, whether continued or intermitting, are only varieties of this.*

The Tertian is defined by Dr. Cullen, "Paroxyſmi "ſimiles intervallo quadraginta octo circiter horarum, ac- "ceſſionibus meridianis."

* Dr. Fordyce's first Dissertation on Simple Fever.

The Tertian, whose paroxysm does not exceed twelve hours, is called the true simple Tertian; that whose paroxysm exceeds twelve hours, is called the spurious simple Tertian. The former frequently comes on about the middle of the day, and goes off the same evening; the other comes on much earlier, and often lasts for eighteen hours. It is an observation as old as Hippocrates, that the paroxysms of Tertians, as well as other intermittents, are less frequently protracted when the patient is young, his general health good, and particularly when he is not troubled with visceral obstructions.

The Tertian varies in the frequency of the recurrence, as well as the length of its paroxysms; instead of every second day, it sometimes returns every day; it is then distinguished from the Quotidian by its alternate paroxysms being similar, but more or less severe, in all, or some of their stages, making their attack at an earlier or later time of the day, &c. than the paroxysms of the intervening days. When the paroxysms recur in this way, the fever is termed Tertiana duplex; and there might be a division of the Tertiana duplex into that in which the most severe paroxysm happens on the even, and that in which it happens on the odd, day, counting from the beginning of the disease. And this division sometimes assists, we shall find, in forming the prognosis, particularly in double Tertian remittents.* It has been observed that the most severe fit is followed by the most complete apyrexia. Double Tertians, if the fit does not exceed twelve hours, are termed true double Tertians; when it exceeds twelve hours, spurious double Tertians.

When the fits are so protracted that one begins almost as soon as the preceding fit ends, the fever has been termed

* Dr. Cleghorn on the Tertian, in his Treatise on the Diseases of Minorca.

ſubintrant, or ſub-continued. Subintrant fevers are almoſt always remittents, complete apyrexia rarely taking place in them.

The Tertian ſometimes returns twice every ſecond day, the intermediate day having no paroxyſm; it is then termed Tertiana duplicata.

It ſometimes returns twice every ſecond day, while one paroxyſm takes place on the intermediate day; the fever is then termed Tertiana triplex. And Tulpius relates a caſe of the Tertiana quadruplex, which has eſcaped the obſervation of moſt authors, in which two paroxyſms take place every day.* It is ſtill to be remembered that the Tertian type is diſcovered by the paroxyſms being ſimilar on alternate days. When we conſider the manner in which intermittents ſuffer a reduplication of their paroxyſms, we ſhall find, that as often as an additional paroxyſm takes place, both the new and the original paroxyſms are more protracted than the latter were before the acceſſion of the former. Conſidering this circumſtance, and the frequency of the paroxyſms in a quadruple Tertian, the remiſſions muſt be extremely ſlight, and the diſeaſe conſequently muſt nearly aſſume the appearance of a continued fever.

When a ſingle paroxyſm takes place every day, but the remiſſion between the firſt and ſecond paroxyſm is more conſiderable than that between the ſecond and third, and ſo on;† the Tertian has been called Hæmitritæus or Semitertiana.

* The case mentioned by Tulpius supervened on a double Tertian. See his Observationes Medicæ, I. IV. c. 46.

† This indeed is generally the case in double Tertians; but when it is more remarkable than usual, it has given rise to a particular division of this fever.

Authors, however, do not employ theſe terms in the ſame ſenſe.*

The interval of the Tertian, it was obſerved, is forty-eight hours, but ſometimes it is rather leſs, the fit coming on earlier; and ſometimes it is more, the fit coming on later. When the former happens, the fever is called an anticipating Tertian (Tertiana prævertens); when the latter happens, a postponing Tertian (Tertiana tardans). And Dr. Cleghorn has obſerved of the double Tertian, that the more ſevere fit often comes on a little earlier in each period, while the ſlighter fit returns at the ſame hour, or perhaps later.

It is remarkable, that poſtponing agues, after the acceſſion of the paroxyſm is poſtponed to eight o'clock in the evening, frequently have their next acceſſion early in the morning of the day following that on which the fever should have returned; and in like manner, after an anticipating paroxyſm has occurred at eight o'clock in the morning, the next acceſſion is often on the evening of the day preceding that on which it should happen. A poſtponing intermittent is a ſafer fever than an inticipating one.

* Celsus, in his account of the Hæmitritæus, wholly overlooks the remission which takes place, according to the above definition, between the unequal and equal days. The sense in which others use the term Hæmitritæus differs still more widely from the definition, and approaches very nearly to that given of the Tertiana triplex. It is used in this sense by Lommius in his Observ. Medic. libri tres, p. 22, and Eller in his Observ. de Cog. et Cur. Morb. sect. 4, p. 83.

SECT. II.

Of the Varieties of the QUARTAN *and* QUOTIDIAN.

THE varieties of the Tertian having been conſidered at ſome length, a few words will be ſufficient reſpecting thoſe of the Quotidian and Quartan. The latter is defined by Dr. Cullen, "Paroxyſmi ſimiles intervallo ſeptuaginta duarum "circiter horarum, acceſſionibus pomeridianis."

Like the Tertian, it varies in the length of its paroxyſms, and the manner and frequency of their recurrence. There are ſometimes two paroxyſms every fourth day; the fever is then called Quartana duplicata. Sometimes three every fourth day; it is then called Quartana triplicata. Sometimes, of the four days, the third only is without a paroxyſm; a ſingle paroxyſm taking place on the firſt, ſecond, and fourth days, each paroxyſm being ſimilar to that which occurs on the fourth day before it; the fever is then called Quartana duplex. The paroxyſm returns ſometimes every day; it is then called Quartana triplex.

The following is Dr. Cullen's definition of the Quotidian, "Paroxyſmi ſimiles intervallo viginti quartuor circiter "horarum, paroxyſmis matutinis."

This fever varies chiefly in the length of its paroxyſms, and the ſtate of the patient between them. Theſe are the only ways in which Celſus regards the Quotidian as varying. According to Burſerius, however, it varies alſo in having one, two, or even three paroxyſms in the day; and theſe varieties he terms the ſimple, double, and triple Quotidian. But a Quotidian with the appearance of two or three paroxyſms in the day, (for they are never very diſtinctly

marked) is not to be diſtinguiſhed from a continued fever. The terms anticipating, poſtponing, ſubintrant, &c. applied to the Quartan and Quotidian, are employed in the ſame ſenſe as when applied to the Tertian.

All theſe fevers, it may be obſerved, are ſaid in the definitions to make their attack in the day time. The Quotidian in the morning, the Tertian at noon, and the Quartan in the afternoon. It is remarkable of all fevers, that nine perhaps in ten make their attack between eight o'clock in the morning, and eight in the evening. This obſervation is curiouſly illuſtrated by what is said above of anticipating and poſtponing agues.

CHAP. II.

Of the Symptoms of INTERMITTING *and* REMITTING FEVERS.

THESE preſent ſo great a variety, that it will be neceſſary, for the ſake of perſpicuity, to conſider them under different heads. In the firſt Section, I ſhall give a detail of the ſymptoms which more properly belong to intermitting and remitting fevers. In the ſecond, I ſhall take a view of what may be termed the anomalous ſymptoms of theſe diſeaſes. In the third, point out the ſymptoms which characteriſe the different ſpecies, or types as they have been called. In the fourth, the manner in which they aſſume more or leſs of the continued form. In the fifth, the diſeaſes with which they are moſt frequently complicated. And in the laſt, I ſhall more par-

ticularly conſider the prognoſis, which is collected from what will be ſaid under all the preceding heads.

SECT. I.

Of the Symptoms of Intermitting and Remitting Fevers.

A SHORT account of theſe fevers has already been given. We are told, in the definition, that they conſiſt of repeated paroxyſms, complete apyrexia, or at leaſt an evident remiſſion being interpoſed.

A regular fit or paroxyſm of an intermittent is divided into three ſtages. The moſt ſtriking ſymptoms of the firſt ſtage are, a ſenſe of cold and ſhaking, from which it is termed the cold ſtage. The ſecond, characteriſed by an increaſe of temperature, is called the hot ſtage; and the chief ſymptom of the laſt, which is termed the ſweating ſtage, is a copious ſecretion by the ſkin.

1. *Of the Symptoms of the Cold Stage of Intermittents.**

The commencement of the fit is often denoted by the patient frequently yawning and ſtretching himſelf; and

* That the following account of the ſymptoms of intermittents may be leſs complicated, I ſhall omit many which will be mentioned under the head Prognoſis, and ſhall here give those which may be regarded as more properly conſtituting the diſeaſe. It is neceſſary to have recourſe to this, or ſome other ſuch means when the ſymptoms of diſeaſes are very numerous, in order to avoid confuſion; which is not to be done, when the reader is at once preſented with a great variety of ſymptoms. We have ſufficient proof of this in the manner in which the ſymptoms of diſeaſes are generally laid down by foreign ſyſtematic writers, Lieutaud, Burſerius, Frank, &c.

complaining of an uneaſy wearineſs over the whole body. Sometimes the weakneſs is ſuch, that he is ſcarcely able to ſupport himſelf. He is reſtleſs, ſoon tired of the ſame poſture, yet feels the exertion of changing it painful. His thoughts succeed each other more rapidly than uſual, and he feels it irkſome to bend his attention for ſome time to one object. The pulſe is now weaker and ſometimes ſlower than natural. At the commencement of theſe ſymptoms the patient does not always complain of cold, but his ſkin, eſpecially in the extremities, often feels cold to another perſon. The nails ſoon begin to grow pale, the ſame gradually happens to the fingers, toes, lips, &c. and the ſkin becomes rough as when expoſed to cold, and leſs ſenſible than uſual. He now complains of a ſenſe of cold, generally referred to the back, and a trembling ſoon after begins in the lower jaw, and gradually ſpreads over the whole body.*

In ſome caſes the ſenſe of cold is partial, being confined to one or more of the limbs; while at the ſame time the reſt of the body perhaps glows with heat; and while the cold is ſevere on the ſurface, a burning heat is ſometimes felt internally.

After the ſhaking has laſted for ſome time, the patient ſtill complaining of cold, the warmth of his ſkin to the feel-

* The teeth ſtrike against each other, often with ſuch force, that inſtances are on record of the teeth of old people being knocked out by the cold fit of a Quartan. The trembling over the whole body indeed is ſometimes ſo ſevere, that after the cold fit the patient has hardly ſtrength to move his limbs. Even ſyncope is apt to occur during this ſtage when the ſtrength has been much reduced. It ſeldom occurs repeatedly without endangering life. In very ſevere and long continued cold fits, particularly in old people, the body has been known to become ſtiff almoſt like that of a dead perſon.

ing of another perſon, or meaſured by the thermometer, gradually encreaſes.

The pulſe during the cold ſtage, is ſmall, frequent, ſometimes irregular, and often hardly to be felt; the reſpiration frequent and anxious, accompanied with a cough, or interrupted by ſighing; and there is a ſenſe of weight and often of tightneſs and oppreſſion about the præcordia, with great dejection of ſpirits.

The remembrance of things at other times desirable, now diſgusts; and in the more ſevere caſes the hurry of thought which attended from the beginning of the paroxyſm encreaſing, ſome degree of delirium or ſtupor comes on. Delirium is a more frequent attendant on the hot ſtage, and ſtupor, or coma as it has been called, on the cold; the latter often appearing almoſt at the very commencement of the paroxyſm.

Although neither delirium nor coma attend the cold fit, it is not uncommon for ſome of the ſenſes to be conſiderably impaired; the patient often complains of numbness in the limbs; and in ſome inſtances both ſight and hearing have been almoſt loſt. When this happens, the ſtomach is generally loaded with bile.*

Pains of the back, limbs, and loins, or a ſenſation as if the body had been bruiſed, frequently attend this ſtage.

* We know that the stomach is oppressed, when there is a bitter taste in the mouth, when the breath is fœted, the tongue yellowish and covered with thick mucus, when the patient is troubled with eructations, anxiety, and a sense of oppression, pain or heat about the stomach, nausea, vomiting, heaviness or pain of the head, vertigo, thirst, and spontaneous diarrhœa. When these, or part of these, symptoms are present to a considerable degree, they form one of those useless divisions of intermitting fever above alluded to, termed Intermittens Gastrica. See a copious account of this species of intermittent, in the first volume of Frank's excellent Work, entitled Epitome de Cur. Hom. Morb.

The extremities ſhrink ſo that a ring, at other times tight, drops off the finger. Ulcers often dry up, and tumours ſubſide.*

The natural functions are much deranged. The appetite ceaſes, and nauſea and frequently a vomiting of bile ſucceed. In the intermittents, and ſtill more in the remittents of ſultry climates, and even of the warmer ſeaſons of temperate climates, bile is often poured into the ſtomach and inteſtines in prodigious quantity. Sometimes the matter rejected by vomiting, is a ropy, tranſparent fluid, nearly inſipid; alſo frequently ſecreted in great quantity.

When there is much bile in the ſtomach and inteſtines, it is frequently (particularly towards the beginning of the hot fit) paſſed by ſtool as well as vomiting; bile indeed often predominates ſo much in theſe fevers, that the patient ſeems to labour under the jaundice, and the ſerum of the blood and the urine are tinged with yellow.

The thirſt is conſtant, the mouth and fauces dry and clammy. The urine, if not tinged with bile, is almoſt colourless and without cloud or ſediment; and, if there be no bile in the primæ viæ, ſtools are uncommon at this period.

Such are the ſymptoms of the cold ſtage. In different caſes, however, there is great variety. The foregoing ſymptoms are not always equally well marked, nor are all of them obſerved in any one caſe. Even the leading ſymptoms, the ſenſe of cold, ſhaking, &c. have been abſent, ſo that we can hardly ſay there was any cold ſtage.

Its duration varies much; ſometimes it laſts four or five hours, or more, particularly in the intermittents of long peri-

* These effects are only temporary; during the hot stage, or after the paroxysm, tumours and ulcers return to their former state.

ods; at other times not above half an hour, or even a ſhorter time, particularly in remittents, and eſpecially in thoſe approaching to the continued form. Its mean duration perhaps is between one and two hours.*

The cold ſtage generally becomes ſhorter as the diſeaſe increaſes in violence, and, particularly, we ſhall find as it ſuffers a prolongation and reduplication of its paroxyſms. See the third Section of this chapter.

2. *Of the Symptoms of the Hot and Sweating Stages.*

The hot ſtage ſeems ſometimes to be induced by the vomiting which accompanies the cold ſtage; or the cold and ſhivering, after alternating for ſome time with ſhort fits of heat, gradually abate, and more permanent heat is at length diffuſed over the body. The paleneſs and ſhrinking of the ſkin, are ſucceeded by a general redneſs and fullneſs, which, however, give the appearance rather of turgeſcence than relaxation, the ſkin ſtill remaining parched.

The heat in this ſtage often raiſes Farenheit's thermometer, ſix, or eight degrees above the natural temperature. Dr. Fordyce ſtates 105° as the greateſt degree of febrile heat which he has obſerved. Other writers mention higher degrees.

The pulſe now becomes regular, ſtrong, and full. And this ſtate of it generally increaſes till the ſweat breaks out. The breathing is deeper and more free while the ſenſe of tightneſs acroſs the breaſt is in ſome meaſure relieved. In moſt caſes, however, the breathing ſtill continues more frequent and anxious than in health.

* M'Bride's Introduction to the Theory and Practice of Medicine.

The ſenſibility which is impaired in the cold ſtage, is morbidly increaſed in the hot. The patient cannot endure noiſe; and the light is offenſive. The pains of the limbs continue; and the pain of the head, comes on or increaſes, frequently accompanied with a throbbing of the temporal arteries and tinnitus aurium. The confuſion of thought is upon the whole greater in this than in the firſt ſtage, and more frequently riſes to delirium.*

The nauſea and vomiting abate, but the thirſt generally increaſes. The urine, from being limpid, often becomes high-coloured, but is ſtill without ſediment; in other reſpects the ſtate of the natural functions is nearly the ſame as in the cold fit. Except when a diarrhœa attends ſtools ſeldom occur till the end of the paroxyſm, and then there is uſually a looſe ſtool.

Hemorrhagies moſt frequently occur in the hot ſtage. The blood flows from the uterus, from the rectum, if the patient happens to labour under the hæmorrhoids, ſometimes from the lungs, from the ears, but moſt generally from the noſe. If the hemorrhagy from the noſe be free, it is almoſt always a favourable ſymptom, and ſometimes brings immediate relief; but a few drops of blood falling from it, Dr. Cleghorn ſays, he generally found to portend danger, and others have made the ſame obſervation.

The hemorrhagies which appear about the commencement of the hot ſtage, however, are generally the conſequence of too rapid a circulation; and if not attended with relief are ſeldom to be regarded as unfavourable. When we conſider the

* It is not uncommon at this period for the patient to complain of pain, heat, and tension, accompanied also with a sense of pulsation in the stomach and bowels; this, however, is a less frequent symptom, and seems generally to depend on the presence of some irritating matter, and sometimes indicates inflammation, in the primæ viæ.

ſymptoms of typhus, I ſhall have occaſion to notice another ſpecies of hemorrhagies, which ſeldom attend the fevers I am ſpeaking of, till, in conſequence of a debilitated ſtate of the ſyſtem, they have nearly aſſumed the continued form, and which are almoſt always unfavourable.

The appearance of hemorrhagies only aſſiſts us in judging of the event, when we attend to the ſymptoms which accompany them, and the parts of the body from which the blood flows. They may afford the moſt favourable or the moſt fatal prognoſis. I ſhall only remark, at preſent, that when the excitement is conſiderable, they frequently prove favourable, and ſeldom do harm; when the excitement is too low, they are rarely beneficial, and often followed by the worſt conſequences.

When the fever has laſted for a conſiderable time, and the remiſſions have become leſs complete, eſpecially when the epidemic is of a malignant nature; a variety of ſymptoms denoting great debility, and affording a bad prognoſis, ſhew themſelves. But theſe belong rather to continued, than intermitting, fevers.

The violence of the hot ſtage is not, at all times, proportioned to that of the preceding cold fit. Dr. Cleghorn informs us, that the moſt violent fevers he ever ſaw came on without any cold ſtage. It is often obſerved, however, that the longer the cold ſtage is, the more violent is the ſucceeding hot fit, the type of the fever being the ſame. With reſpect to intermittents of different types, this is by no means the caſe, but rather we ſhall find the contrary.

The hot ſtage is at length terminated by a profuſe ſweat. The ſweating generally begins about the head and breaſt, extending gradually to the back and extremities. The unuſual ſtrength and frequency of the pulſe now abate, and the breathing becomes free. The urine depoſits a ſediment like

brickduſt, which has been termed lateritious, or a light copious reddiſh or white ſediment; and the patient generally falls into a ſleep, while the ſymptoms of the fever abate, leaving him weak and wearied.

Although the patient, between the paroxyſms of an intermittent, is free from fever, he ſeldom enjoys perfect health, eſpecially if they are ſevere. He appears dejected and drowſy, is eaſily fatigued, complains of want of appetite, if the ſkin is not parched, there is a greater tendency to ſweat than in health, and vomiting and purging are not unuſual at this period. The more he is harraſſed by ſuch ſymptoms during the apyrexia, the more reaſon there is to dread that the enſuing paroxyſm will be ſevere.

All intermittents are apt to change to a more or leſs continued form, the tendency to become continued is unfavourable. The contrary tendency affords a good prognoſis.

SECT. II.

Of the Anomalous Symptoms of Intermittents.

The anomalous appearances of intermittents, may be divided into four claſſes. The first, comprehending thoſe caſes in which the order of the different ſtages conſtituting the paroxyſm is deranged, or in which ſome of the ſtages are wanting. The ſecond comprehending thoſe caſes in which the whole paroxyſms or ſome of its ſtages are confined to particular parts of the body. The third, thoſe in which certain ſymptoms prevail ſo much as to alter conſiderably the appearance of the diſeaſe; and the laſt, thoſe in

which other diſeaſes or particular ſymptoms aſſume the form of an intermittent.

It is obſerved, by Cleghorn,* Senac,† and others, that the cold ſtage, particularly at an early period of the diſeaſe, is ſometimes wanting. Sometimes it accompanies only ſome of the paroxyſms: Frank‡ remarks, that even the hot ſtage itſelf is ſometimes ſcarcely perceptible; at other times, as in caſes mentioned by Senac,‖ the hot and ſweating ſtages occur together. The hot fit, Frank obſerves, ſometimes precedes the cold, and ſometimes there is no ſweating ſtage, the ſkin remaining dry during the whole paroxyſm.§ "The "tumult and uneaſineſs (ſays Dr. Jackſon,**) of intermittent "fever which terminate in moſt caſes by ſweat, went off in "ſome by urine or ſtool, or perhaps declined in others without the appearance of any preternatural evacuation." Dr. Cleghorn makes ſimilar obſervations. And there are caſes mentioned in the works of Burſerius†† and Schenkius‡‡ in which the order of the ſtages was ſo far inverted, that, in one inſtance, the cold ſtage was the laſt, and in another, the ſweating ſtage, the firſt.

The ſecond claſs of the anomalous caſes of intermittents comprehends thoſe in which the paroxyſm, or ſome of its ſtages, is confined to particular parts of the body. Vogel‖‖

* Dr. Cleghorn on the Diseases of Minorca.

† Senac de Febribus.

‡ Frank's Epitome de Cur Morb.

‖ De Frebribus.

§ Senac de Febribus.

** Jackson on the Fevers of Jamaica.

†† Burserius Institut. Med. Pract.

‡‡ Schenkius Observat. Med. Rariores.

‖‖ Vogel's Prælect. Acad. de Cog. et Cur. Morb.

obſerves that the cold ſometimes ſeizes on one member only, for inſtance, the arm, and is ſometimes confined to one half of the head; nay, the whole fit is ſometimes confined to a particular part of the body, which undergoes the ſymptoms of the cold, hot, and ſweating ſtages, while the reſt of the body remains unaffected.*

The third claſs comprehends thoſe in which certain ſymptoms prevail ſo much, as to alter conſiderably the appearance of the diſeaſe.

"Sometimes one or two ſymptoms of the fit (Dr. Cleg-
" horn obſerves) predominate with ſuch violence that the
" reſt are obſcured or altogether eclipſed. Hence we ſo fre-
" quently meet with hemicranias, choleras, dyſenteries, and
" chincough, returning regularly at ſtated periods; and ſeve-
" ral fevers of this claſs, upon account of ſome predominant
" ſymptom, have had particular names beſtowed on them."
I formerly had occaſion to notice them. Dr. Cleghorn obſerves in another place, that intermittents are ſometimes ſo complicated with pains of the head, breaſt, belly, back or limbs, as to appear like a pleuriſy, phrenzy, hepatitis, or lumbago, particularly when the remiſſions are obſcure.

I have known patients, ſays Stork,† who along with fever were every day, at a certain time, ſeized with palpitation of the heart, or great anxiety about the precordia, with fruitleſs and violent coughing; others were attacked with a violent pain of the whole or part of the head. Sir John Pringle ‡

* There is a striking instance of this kind related in the Nosologia Methodica of Sauvages.

† Stork's Anni. Medici.

‡ Sir John Pringle's Observations on the Diseases of the Army.

obſerves, that among the intermittents which prevailed in the army, there were ſome which attacked the head ſo ſuddenly, and with ſuch violence, that the men without any previous ſymptom of indiſpoſition ran about in a wild manner, and were believed to be mad till the ſolution of the diſeaſe, and its periodic return, ſhewed its real nature.

Dr. Ruſh,* and many others, mention caſes of intermittents coming on with delirium, particularly Mr. Clark in the fourth volume of the Medical Obſervations and Inquiries. Great ſwelling of the tongue, a ſtrangury, dreadful horror, with a deſire to die, and boils on the ſkin, mentioned as frequent ſymptoms in the bilious remittent fever of Bussarah, may alſo be regarded as anamalous.† In the ſixth volume of the Edinburgh Medical Eſſays there is a caſe related by Mr. Bain, in which epilepſy attended the paroxyſms of an intermittent; and, in the fifteenth volume of the Medical Commentaries, another related by Mr. Davidson, in which the paroxyſms were accompanied by amauroſis.

In ſhort, the anomalous appearances of intermittents belonging to this class are very various. It is impoſſible to enumerate all that have been obſerved; thoſe mentioned are ſufficient to put the practitioner on his guard, and prevent embarraſſment. It appears from the obſervations of a variety of authors, that when we ſucceed in removing the fever by the ordinary means, ſuch anomalous ſymptoms yield along with it. This even happened in the two caſes juſt alluded to, in which epilepſy and amauroſis were complicated with it.

* Rush's Medical Obs. and Inq.

† There is a good account of this dreadful fever in a work entitled The transactions of a Society for the Improvement of Medical and Surgical Knowledge, for 1793.

And ſtill farther to perplex intermittents, and increaſe their irregularity, in one paroxyſm certain ſymptoms ſhall predominate, and in another, ſymptoms of quite a different nature.

When ſuch ſymptoms predominate, they often derange the fever, ſo that it is impoſſible to ſay of what type it is. But if they have ſupervened on the fever, when they abate, it generally aſſumes the ſame type which it had before their appearance.

The laſt claſs of anomalous caſes, comprehends thoſe in which other diſeaſes, or particular ſymptoms, aſſume the form of an intermittent.

Certain ſymptoms, ſuch as pain in ſome part of the head, coma, delirium, even hiccup, recurring for ſeveral paroxyſms, with intermitting fever, at length take place, at ſtated intervals, after every ſymptom of fever is removed. Caſes of this kind are related by Senac and a variety of other authors. But it does not always happen that the ſymptoms which thus recur perioridically have accompanied an intermittent. They ſometimes appear from the firſt without fever, and continue to recur at the quotidian, tertian, or quartan interval.

Stork* relates a caſe of amauroſis which recurred in this way. Rheumatic pains have often been obſerved to do ſo. Dr. Ruſh† relates ſeveral caſes of this kind. There is a very curious account of pulmonary complaints aſſuming the form of an intermittent, by Dr. Chapman, in the firſt volume of the Medical Commentaries. Dr. Strack‡ enumerates many of the anomalous ſymptoms belonging to this claſs.

* See his Anni Medici.

† See his Med. Obs. and Inq.

‡ Strack de Feb. Intermit.

He relates one caſe which never appeared in any other form but that of coma. He alſo met with inflammation of the eyes appearing as an intermittent, and enumerates pleuritis, cholera, cholic, gout, hiſteria, and convulſions, as apt to aſſume the ſame form.

It deſerves particular attention, that ſuch caſes almoſt always yield to the ſame means which remove intermittents, however diſſimilar to theſe fevers in all reſpects, except their periodical recurrence. This curious fact has been eſtabliſhed by very extenſive obſervation.

I ſhall only add, before I leave the anomalous ſymptoms of intermittents, that theſe fevers have ſometimes left behind them irregular ſhakings, which often prove very obſtinate. There are caſes of this kind related by Dr. Monro in the ſecond volume of the Edinb. Med. Eſſ. and Obſ. and in the fourth volume of the ſame work by Mr. Andrew Williſon. The caſe related by the latter yielded to the cold bath.

SECT. III.

Of the Symptoms peculiar to the different Types.

We have now conſidered the ſymptoms eſſential to, or attendant upon intermitting fevers in general. It is proper, however, before we leave this part of the ſubject, to ſay ſomething of the ſymptoms peculiar to each of the ſpecies, the varieties of which have been conſidered.

The quotidian is comparatively a rare fever; ſome have even denied its exiſtence, for which they are deſervedly cen-

ſured by Eller. We often meet with intermittents whoſe paroxyſms return every day; but moſt of theſe are double tertians, in which the fits do not return every day at the ſame hour, or if they do, are diſſimilar, that is, not of the ſame duration or degree of violence, or not having the violence and duration of their different ſtages in the ſame proportion.

It is obſerved by Dr. Cullen, in his definition of the quotidian, which has been quoted, that its paroxyſms occur in the morning. This is generally, but not always, the caſe.

In the quotidian the cold ſtage is ſhorter, leſs ſevere, and more frequently wanting than in the tertian or quartan. But the whole paroxyſm is generally longer than in either of theſe fevers; and the quotidian is moſt apt to aſſume the continued form. Any of the others, about to become continued, in the firſt place ſo far aſſumes the appearance of the quotidian, as to have a paroxyſm every day.

Galen ſays, every phyſician ought to know, from the appearance of the firſt fit, of what type an intermittent will be. He gives the following diagnoſis for diſtinguiſhing the paroxyſm of a quotidian. The heat is more moiſt than in other intermittents, and joined with a kind of acrimony, which is not immediately perceived on applying the hand; the thirſt is leſs, and there is a diſcharge of phlegmatic humours, by vomiting and ſtool; the body abounds with crude humours; the patient's age or habit is too moiſt, and the ſeaſon of the year, or ſtate of the weather, is damp. In a quotidian, he adds, there is never ſo great heat as in the paroxyſm of a tertian. We cannot, however, truſt to this diagnoſis in predicting the type of the fever, although it is not to be altogether overlooked. Whatever the extenſive practice of Galen may have enabled him to do, it is now

generally admitted that we can ſeldom determine the type of an intermittent from the ſymptoms of one paroxyſm.

Upon the whole, however, a mild paroxyſm coming on in the morning, particularly in the ſpring, often proves a fit of the quotidian.

In the ſimple tertian the cold ſtage is generally longer and more ſevere than that of the quotidian, but the whole fit is ſhorter, in moſt caſes not exceeding ten or twelve hours, and often terminating in five or ſix.

The cold ſtage in the tertian is upon the whole leſs ſevere than in the quartan, and of ſhorter duration; but the whole paroxyſm of the former is generally longer.

Galen obſerves, that at the commencement of the paroxyſm of a tertian, there is often a painful ſenſation like prickling; the thirſt (he remarks) is always urgent, the heat very great, and univerſally diffuſed over the body, ſtrongly affecting the hand of the phyſician on firſt touching the patient, but ſoon after ſeeming to be leſs than that of his own hand. Such obſervations on the heat in fevers ſeem at firſt view whimſical; we ſhall find, however, when we come to conſider certain kinds of continued fever, that they are not altogether unfounded.* It is not difficult to ſuppoſe that the diſeaſed ſecretion from the ſkin may modify the ſenſation produced by the increaſed temperature.

Eller maintains that the cold is more conſiderable in the tertian, and confirms Galen's obſervation that the heat is greater (calor magis urens) than in other intermittents; Hoffman, Huxham, and others have alſo endeavoured to

* See the observations of Sir John Pringle, Huxham in his work on Fevers, Moore in his Medical Sketches, and others on this subject.

characteriſe a paroxyſm of the tertian, but there is no diagnoſis which enables us with any certainty to diſtinguiſh it from that of other agues. Nor are we enabled to do ſo by the time of the day at which it appears. It frequently indeed makes its attack about mid-day, but this is by no means conſtant. In double tertians the fits are ſometimes alternately before and after mid-day. It has been obſerved, that the paroxyſms which occur towards evening, are generally moſt ſevere.

The tertian is ſometimes, but rarely, protracted for ſeveral months; in autumn it now and then becomes a quartan, and is protracted for a much longer time. It is upon the whole leſs obſtinate than other intermittents. But Frank* juſtly remarks that of all intermittents it is the moſt apt to become malignant, and appears moſt frequently as an epidemic. If any exception may be made to the former of theſe obſervations, it is with reſpect to the quotidian when it appears in autumn, which rarely happens.

The vernal intermittents are almoſt always either quotidians or tertians. Sydenham† conſidered them as not only ſafe but ſalutary, and if protracted till the autumn, he obſerves, which ſeaſon is unfavourable to theſe ſpecies of intermittents, they generally ceaſe ſpontaneouſly. It may be obſerved on the other hand, that if autumnal tertians are protracted to the following ſpring, it alſo generally puts a period to them.

The vernal intermittents, the type being the ſame, are leſs ſevere, leſs liable to become continued, to be accompanied by bilious ſymptoms, and followed by dangerous conſequences, than the autumnal; they are alſo leſs diſpoſed to return.

* Epitome de Cur. Hom. Morb.

† Sydenhami Opera Sect. de Feb. Intermit.

In the vernal intermittents, increaſed excitement generally prevails; in the autumnal, debility. We ſhall afterwards find the following obſervation fully illuſtrated; that we always have it in our power to diminiſh excitement as much as we pleaſe, but often find it impoſſible ſufficiently to increaſe it. Hence it chiefly ariſes that autumnal agues are more dangerous than vernal; and it will appear, as we proceed in conſidering febrile diſeaſes, that this obſervation, more than any other, influences our practice in all idiopathic fevers.

Dr. Brocklesby* informs us, that he never ſaw an inſtance of a quartan which came on in the ſpring, and his experience was very extenſive.†

It often makes its attack in the afternoon; the cold ſtage upon the whole is more ſevere, and of longer duration, than that of either the quotidian or tertian; it generally laſts for about two hours, and ſometimes longer. Dr. Grant § ſays, he has ſeen the cold fit of the quartan laſt fifteen hours. Eller and others obſerve, that the ſenſation of cold is not in general ſo great as in the cold fit of the tertian.

The whole fit of the quartan is generally ſhorter than that of either the quotidian or tertian.

At the invaſion of quartans, Galen obſerves, the pulſe is as it were bound up and drawn inwards, nor is there that ſenſe of painful pricking which we meet with in the cold fit of the tertian, but the patient feels as if all the ſoft parts

* Dr. Brocklesby's Observations on the Diseases of the Army.

† We shall find, in speaking of the causes of intermittents, that in climates where the changes of the seasons are remarkable, spring and autumn are those in which they most frequently appear.

§ Dr. Grant's observations on Fevers most frequent in London.

were bruiſed. The following is perhaps the beſt diagnoſis of a fit of the quartan; the cold is not ſo violent as in the tertian, but of longer duration; the heat is more gentle and dry, and the ſweating ſcanty.*

The quartan is more apt to be followed by obſtructions of the viſcera than other intermittents, owing probably to its being more obſtinate. It has, like the gout, been termed the Opprobrium Medicorum. Some authors aſſert that they have known a quartan laſt for twenty or thirty years. It is a remark of Sydenham, however, that if a perſon be attacked by it for the ſecond time, it generally goes off after a few fits. When it has been obſtinate, and attended with delirium, the patient has ſometimes remained in a ſtate of fatuity for a long time after it, as happens more frequently after certain ſpecies of continued fever.

The quartan is particularly ſevere on old people; young people generally get the better of it, on or before the ſucceeding ſpring. Sydenham ſays, he has been ſurpriſed to ſee infants labour under a quartan for ſix months, and bear it well.

Although an autumnal ague, it is leſs apt than any other to become continued, or be attended with ſymptoms of danger.

Upon the whole, the principal difference between the paroxyſms of the different types conſiſts in their duration, and the proportional duration of their different ſtages. In the quotidian the cold fit in general is ſhorter than in the other two ſpecies, but the whole paroxyſm is longer. The cold fit of the tertian is longer than that of the quotidian, but ſhorter than that of the quartan, and the whole paroxyſm is ſhorter than that of the quotidian, but longer than that of the quar-

* Eller de Cog. et Cur. Morb.

tan. The quartan in general has the longeſt cold fit, but the ſhorteſt paroxyſm. The duration of the cold fit then in the different types is proportioned to that of the intermission. The contrary is true of the duration of the whole paroxyſm.

We are now to conſider the manner in which the different types aſſume more or leſs of the continued form. Some of the facts relating to this part of the ſubject indeed have already been mentioned; it may be uſeful to preſent them at one view.

SECT. IV.

Of the Manner in which the different Types aſſume more or leſs of the continued Form.

PHYSICIANS have long endeavoured to aſſign a cauſe for ſome fevers aſſuming the form of intermittents, while others appear continued, at leaſt ſo much ſo that the ſlight remiſſions which take place in them can often hardly be perceived. But how fruitleſs their labours have been, appears at the firſt view of their ſeveral opinions. Even Sydenham's ſpeculations on this ſubject are but ill warranted by obſervation. It would be miſpending time to enter on the merits of theſe hypotheſes; let us take a ſhort view of the facts which gave riſe to them.

When the fits of the quotidian are lengthened, there is no time for any apyrexia; and thus the intermittent is changed into a remittent. As the paroxyſms are protracted, the remiſſions appear leſs remarkable, and the fever at length becomes continued.

The tertian, we have ſeen, is liable to a reduplication of its paroxyſms, and then it alſo may readily aſſume the continued form; for it is an obſervation generally applicable, that when a reduplication of the paroxyſms takes place, the new are not only more protracted than the original paroxyſms, but theſe alſo become more protracted than they were before the acceſſion of the former. Although the paroxyſm upon the whole is protracted, the duration of the cold fit is diminiſhed as that of the hot is increaſed, ſo that when the fever has aſſumed the continued form, the cold fit for the moſt part is ſcarcely to be perceived. It is alſo to be obſerved, that when an intermittent aſſumes the continued form, the ſymptoms of the hot ſtage, in proportion as it is protracted, generally become more ſevere; and thoſe of the cold ſtage, in proportion as it is ſhortened, milder.

The quartan ſeldom aſſumes the continued form. The quartana triplex is a rare diſeaſe. If it ſuffers a reduplication of its paroxyſms it may readily become continued.

The new paroxyſms, added to a tertian or quartan, when they become double, for inſtance, always reſemble the paroxyſms of the firſt fever, in being of the ſame type.

Van Swieten obſerves that, as far as he knows, quintans and other intermittents of more protracted types never aſſume the continued form.

It will afterwards appear, that the chief if not the only circumſtances which determine intermittents to aſſume more of the continued form, are the inflammatory diatheſis, and debility. It is the former we moſt frequently have to combat in theſe fevers; the means of removing it with ſafety, therefore, (that is, without running the riſk of inducing the oppoſite and more dangerous ſtate of debility,) forms an eſſential part of their treatment.

Inſtead of becoming more continued, intermittents ſometimes become leſs ſo, which is always favourable. If a reduplication of the paroxyſms of a tertian or quartan has taken place, they again become ſimple, and in proportion as they do ſo, the remaining fits at the ſame time become ſhorter, while the cold ſtage again occupies a greater ſhare of them.

Intermittents ſometimes aſſume a more intermitting form by changing their type. It is not uncommon for an autumnal quotidian or tertian to be changed into a quartan, after the violence of the fever is broken.

Continued fevers alſo change to a more or leſs intermitting form. When this happens, they have formerly, for the moſt part, been intermittents, or appeared with inflammatory ſymptoms while intermittents were epidemic; but all kinds of continued fever may aſſume the intermitting form.

SECT. V.

Of the Diſeaſes with which Intermittents are moſt frequently complicated.

With regard to a variety of ſymptoms which often appear in intermittents, ariſing from their being complicated with other diſeaſes, little can be ſaid here, as I am not to treat of the different diſeaſes to which they belong. The diſeaſes with which intermittents are moſt frequently complicated are, diarrhœa, cholera, dyſentery, obſtructions of the viſcera, dropſy, jaundice, and different ſpecies of inflammation.

Inflammation of ſome of the viſcera and remittent fever is one of the moſt common of theſe combinations. De Haen* and others relate many caſes of remittents, in which the ſtomach and bowels were found on diſſection inflamed and ſphacelated. This combination has been obſerved to be remarkably frequent in certain epidemics. Bartholine † in particular gives an account of an irregular remittent that raged at Copenhagen, which was always accompanied with inflammation of the ſtomach and duodenum; and we have an account of a ſimiliar fever at Leyden, by Profeſſor Silvius de la Boe.‡ The brain is alſo ſometimes the ſeat of inflammation in remittents, as appears from the account of diſſections by Sir John Pringle § and others. Rheumatiſm frequently accompanies the intermittents of cold climates.‖

The vernal intermittents are moſt frequently complicated with inflammatory diſeaſes. Thoſe of autumn with diſeaſes of debility, particularly dyſentery.

The concurrence of ſome of the foregoing diſeaſes and intermitting fever is to be aſcribed to the nature of the epidemic, the climate, or the conſtitution of the patient; but ſome of them are the effects of the fever itſelf; ſchirrous indurations of the viſcera, for inſtance, and their conſequences, atrophy, jaundice and dropſy. The

* See his Ratio Medendi.

† Barthol. Hist. Anatom. Rar. hist. 56.

‡ Prax. Med. Append. tract x.

§ See his Observations on the Diseases of the Army.

‖ See the epidemics described by Sir John Pringle, in his Observ. on the Dis. of the Army.

liver and ſpleen are the viſcera moſt frequently affected.*

Agues alſo ſometimes check habitual diſcharges, the menſtrual and hemorrhoidal flux, and ſometimes interrupt the ſecretion of milk in nurſes. They alſo now and then occaſion exceſſive diſcharges by ſweat or ſtool, of the menſes, lochia, &c.†

It has long been the opinion of phyſicians, that intermitting fevers, if not unuſually ſevere, pre-diſpoſe to good health and long life. Unleſs theſe fevers, ſays Boerhaave,‡ are malignant, they diſpoſe the body to longevity, and purge it from inveterate diſorders. Nor do I believe, his commentator obſerves, that any phyſician who has conſidered this diſorder will deny that after quartan fevers, diſturbed by no powerful remedy, but gradually reſolved by a good diet, in

* When we reflect on the nature of the circulation in the liver, and whence the greater part of its blood is supplied, we are at no loss to account for the ascites that sometimes attends its induration. Nor is it difficult to conceive in what manner an induration and enlargement either of this viscus or the spleen frequently produces an anasarca of the lower extremities, gradually extending over the whole body, as the cava ascendens is exposed to the pressure of the enlarged viscera. That jaundice must frequently be the consequence of an induration of the liver or pancreas, is evident from considering the situation of the biliary ducts, which may be pressed upon by enlarged portions of either of these organs.

Long protracted agues produce cachexy and atrophy, by occasioning obstruction of the mesenteric and other glands of the abdomen.

† See observations on these effects of intermittents, in Strack de Febribus Intermittentibus, Brocklesby on the Diseases of the Army, Jackson on the Fevers of Jamaica, &c.

‡ Aph. Boerhaavii.

the ſpring time, the body has been found more firm, and much leſs ſubject to diſeaſes than before.* This opinion, however, ſeems far from being generally well founded, and has often done harm by preventing the endeavours of the practitioner to ſtop the fever at an early period.

It is not to be denied that an ague ſupervening on other diſeaſes, has ſometimes relieved them; and when theſe are more to be feared than the ague, it muſt be removed with caution. Habitual rheumatiſms, inflammations, cutaneous eruptions, indigeſtions, epilepſy, hiſteria, &c. Dr. Fordyce† obſerves, are relieved by a regular tertian. The quartan, ſays Vogel,‡ has often prevented gout, aſthma, convulſions, and hypochondriacal affections; and even Hippocrates ſays that the quartan is a ſafe fever and prevents others. Thoſe affected with convulſions, he adds, are relieved from them by a quartan. Intermittents are alſo ſaid to relieve or remove palſies, &c. Some are inclined to doubt of many effects of this kind which have been aſcribed to them.§

SECT. VI.

Of the Prognoſis in Intermittents.

As the prognoſis in intermitting fever is collected from the ſymptoms of the paroxyſm, and the ſtate of the patient

* Comment. in Aph. Boerhaav.

† First Dissert. on Simple Fever.

‡ Prælect Acad. de Cog. et Cur. Morb.

§ See some observations on this part of the subject, in a Treatise on Malignant Intermittents by Aurivillus, in Baldinger's Sylloge Opusculorum.

between the paroxyſms, it may be divided into two parts. I ſhall, in the firſt place, take a ſhort view of the ſtate of the different functions, which during the paroxyſms chiefly indicates danger.

The weakneſs and irregularity of the voluntary motions become more remarkable, as the danger increaſes. Involuntary twitchings of the muſcles, (ſubſultus tendinum) and ſtartings, often terminate in general convulſions, in which the patient expires. Coma frequently comes on, and as death approaches it is often impoſſible to rouſe the patient. Delirium is ſtill more unfavourable. The danger is very great when it is among the firſt ſymptoms, as happened in ſeveral epidemics above alluded to, and that of Bengal, deſcribed by Dr. Lind, in which the patient generally died in the third paroxyſm.

To this head belongs the depravation of particular ſenſes, eſpecially falſe viſion, which in all fevers is among the worſt ſymptoms. Deafneſs is generally favourable.

With regard to the vital functions, palpitation of the heart and much anxiety are unfavourable ſymptoms. The pulſe before death generally becomes very frequent, weak, and irregular, except when a conſiderable degree of coma is preſent; it is then often ſlow and regular: but, while the coma continues, this ſtate of the pulſe by no means aſſures us of the patient's ſafety; it frequently precedes a fatal apoplexy. In this, as in moſt other diſeaſes, death often approaches with a paleneſs, ſhrinking, and coldneſs of the extremities; the pulſe is then hardly or not at all perceptible.

There is alſo danger in the oppoſite ſtate of the circulation, in which the pulſe is remarkably ſtrong and full; this however we have it more in our power to correct.

The reſpiration is much affected as the fatal termination approaches; it becomes anxious and quick, though often at

the ſame time leſs frequent than natural, interrupted with ſighs and groans; and, a little before death, ſometimes ſuffers conſiderable intermiſſions.

This intermiſſion of the reſpiration is ſeldom very remarkable, except when the patient dies much exhauſted, and affected with coma. It is frequently more conſiderable in other caſes where the brain is more particularly the ſeat of the diſeaſe. Dr. Whytt takes notice of its being a common ſymptom in the hydrocephalus internus.*

Under the head of reſpiration, it may be obſerved, that hiccup is a dangerous ſymptom, if it occurs while the others are alarming; eſpecially if accompanied with vomiting.

Every change in the voice from its natural tone indicates danger, and the loſs of ſpeech is often the forerunner of death.

With reſpect to the natural functions, much nauſea, the abdomen ſwelled, hard and painful to the touch, with obſtinate coſtiveneſs, are dangerous ſymptoms; a hard belly, and a ſwelling of the tonſils, are regarded by Sydenham as fatal ſymptoms in autumnal agues. It often happens that for ſometime before death the patient is unable to ſwallow, the tongue, mouth, and fauces becoming very foul. "The "danger is very great when the tongue is immoderately dry

* I met with a case in which it was more remarkable than in any I have read of; the patient (a boy suspected to labour under an affection of the head) had been long ill, and was much reduced. Before his death a considerable degree of coma came on, and his breathing for about the last half hour was so much interrupted that there were not less than six or eight minutes between each inspiration, so that his friends, thinking him dead, repeatedly closed his eyes, and were astonished a short time after to hear him make a very sonorous inspiration.

"or black, or covered with a white ſlimy gelatinous ſub-
"ſtance. To the above we may add, a ſodden or parboiled
"appearance of the tongue, which indicates much danger."*

A ſpontaneous, or what has been termed colliquative, diarrhœa frequently precedes death, and the ſtools are often black and fetid from the vitiated ſtate of the bile. A black matter like coffee grounds, diſcharged either upwards or downwards, denotes much danger; this ſymptom is generally the conſequence of hemorrhagy from the ſtomach or bowels. In the remittents of warm climates the bile ſometimes aſſumes this appearance, more frequently that of tar or molaſſes. Whatever be the matter evacuated, vomitting is dangerous if it does not abate towards the end of the paroxyſm, eſpecially if the anxiety is great, and the diſcharge does not bring relief.

The urine or ſweat being offenſive, the former of a dark colour, and depoſiting a brown or blackiſh ſediment, the latter tinging the patient's linen with a brown colour, both of which appearances proceed from an admixture of blood, and the eyes being ſuffuſed with blood, are among the moſt alarming ſymptoms.† The ſphincters are frequently relaxed for ſome time before death, ſo that the urine and fæces are paſſed involuntarily.

It may be obſerved upon the whole, that much danger is indicated by the various ſymptoms denoting great debility in the natural functions. Theſe will be enumerated more at length when we conſider the ſymptoms of typhus, to which fever they properly belong.

* Dr. Jackson's Treatise on the Fevers of Jamaica.

† These are the most fatal of the hemorrhagies above alluded to, which almost always afford a bad prognosis.

In the laſt ſtage of the paroxyſm, a free and thin ſweat univerſally diffuſed, and not occaſioning much loſs of ſtrength, affords a favourable, the oppoſite of theſe, an unfavourable, prognoſis.*

With reſpect to the prognoſis during the remiſſion, or apyrexia, in proportion as theſe are ſhorter, and leſs complete, the danger is greater. A ſimple quartan is a ſafer fever than a tertian; a ſimple tertian than a quotidian; and this becomes the more dangerous, the more its paroxſyms run into each other. Theſe obſervations, however, by no means apply univerſally.†

If the patient, during the apyrexia, even although this be complete, feels himſelf weak and oppreſſed, eſpecially if there be a tendency to œdema in his feet and legs, he is not free from danger. We ſhould enquire, Burſerius obſerves, if on the days of intermiſſion the tongue be dry and rough; if the patient be unquiet, liſtleſs, and apt to ſigh; if he be ſubject to vomitting or purging; if he be drowſy; or, in ſhort, diſordered in any other way; for then we may

* Dr. Rollo observes in his account of the diseases of St. Lucia, that "a comatose disposition, remarkable dejection, coldness of the "skin, partial cold sweats, hiccup, involuntary stools, subsultus "tendinum, loss of speech, &c. were certain signs of danger. "When flies become numerous about the patient's bed in any "period of the disease (he adds) and adhere to his lips and eyes "without his being sensible of their attachment, it is a certain "mark of danger. Indeed these insects never made their ap-"pearance in any number, until danger, by other signs, was too "apparent."

† Burserius and Frank give a good account of the symptoms which afford an unfavourable prognosis during the apyrexia. See the Epit. de Cur. Hominum Morb. by Frank, vol. 1, p. 59, and the Institut. Med. Pract. of Burserius.

ſuſpect ſome lurking miſchief. If theſe ſymptoms proceed from no evident cauſe, he adds, we dread in the enſuing paroxyſm cardialgia, cholic, lethargy, or ſome ſuch alarming ſymptom.

All combinations of other diſeaſes with intermittents are dangerous.

The favourable prognoſis may be readily collected from what has been ſaid of the ſymptoms affording an unfavourable one. The paroxyſm being moderate, the patient bearing it without much loſs of ſtrength, and enjoying good health during a long apyrexia, are the beſt ſigns.

There is a ſet of ſymptoms which occur now and then in all kinds of fever, and have generally been obſerved to attend, and generally ſuppoſed to occaſion, a favourable change in the ſtate of the diſeaſe. On this account they are termed critical. Sweating, by which the paroxyſm terminates, is a ſymptom of this kind. We ſhall have occaſion to conſider this ſubject more at length in treating of continued fever. "An eruption about the mouth and ears, (ſays Dr. Rollo*) "with a ſwelling of the upper lip, either in this fever, or "in the intermittent, happening when the paroxyſm was "going off, was a certain ſign of recovery, except when "the other ſymptoms were dangerous; theſe then aſſiſted the "unfavourable prognoſis." Intermittents, Vogel† obſerves, are often removed by cutaneous eruptions, particularly the miliary eruption, and ſmall pox, by the hæmorrhois, by a ſalivation, or by an ulcer of the lips.

* See his Obs. on the Dis. of St. Lucia.

† Præ. Acad. de Cog. et Cur. Morb.

The moſt obſtinate intermittents are not always the moſt dangerous. Tertians, upon the whole, are removed with moſt eaſe, and quartans with moſt difficulty. Hippocrates has pronounced a quartan to be the longeſt and ſafeſt of fevers. This obſervation applies only to the ſimple quartan; when it has ſuffered a reduplication of its paroxyſms, the prognoſis is no better in it than in other intermittents. Celſus obſerves that the quartan is a ſafe fever, unleſs it become a quotidian.

Upon the whole, intermitting fever, though often a very obſtinate, is not generally a very dangerous, diſeaſe. The ſymptoms enumerated as affording an unfavourable prognoſis, ſeldom make their appearance, unleſs it has ſuffered a reduplication and protraction of its paroxyſms, or is complicated with other diſeaſes. In the latter caſe, the danger cannot be aſcertained without being acquainted with the prognoſis in theſe diſeaſes. Epidemics indeed occur, which form an exception to this obſervation, particularly in ſultry climates.

Death may happen at any period of intermittents. It moſt frequently happens in the hot ſtage, except in the quartan, in which, Sydenham obſerves, death generally happens in the cold ſtage. The patient rarely dies in the ſweating ſtage; if he is much reduced, however, and the ſweating is profuſe, death may happen at this period alſo. It alſo ſometimes happens during the remiſſion, in conſequence of the violence of the preceding paroxyſm.

If the firſt paroxyſms of an intermittent are mild, the prognoſis is good; if from being ſevere they become mild, it is better. But we muſt not form a decided opinion from the mildneſs of one or two paroxyſms, and the health of the patient during their intermiſſions.

It may upon the whole be remarked, that the ſafety of the patient is rather to be eſtimated from the mildneſs of the paroxyſms, than from the length and completeneſs of the apyrexia.* It has been obſerved of complicated intermittents, that thoſe are moſt to be dreaded whoſe paroxyſms are moſt ſevere on the even days.

Some attempt to foretel the period at which the fever will terminate favourably, by attending to that at which it comes to its height; that is, the time at which the paroxyſms from becoming more violent, begin to become leſs ſo; for it is common in theſe fevers for every paroxyſm, during the firſt intervals, to be more violent than that which preceded it. "The tertian intermittents, or remittents, which come to "their height in the fourth period, (Cleghorn obſerves) "terminate in the fifth or ſixth; thoſe which come to their "height in the fifth, terminate about the ſixth or ſeventh." Cleghorn ſpeaks of the tertians of Minorca. No general rule of this kind can be laid down. Every one muſt make ſuch obſervations for himſelf in the climate, and even epidemic, in which he practiſes. It is ſufficient to be warned, that by making ſuch obſervations he will be enabled, with more accuracy, to foreſee the event of the diſeaſe.

A paroxyſm which, without any evident cauſe, is conſiderably more ſevere than thoſe which preceded it, is often the laſt, the patient remaining well after it.†

To the head of prognoſis, belongs the doctrine of critical days.

* There are some good observations on this part of the subject, in the first chapter of the third book of Torti's Therapeutice Specialis.

† Fordyce's second Dissertation on Simple Fever.

This doctrine the reader will find noticed in the writings of physicians ever since the days of Hippocrates, who paid particular attention to it.

Some regard it as wholly unfounded. This opinion, however, appears to be the result of a confined view of the subject. The diseases of different climates vary, and the observations on which it is founded, have been too frequently repeated to permit us to doubt that there is a tendency to periodic changes in the fevers of certain latitudes. But were it wholly unfounded, it is necessary to be acquainted with a doctrine so generally blended with medical writings.

Physicians were soon led to observe what has been termed the crisis of fevers, viz. changes, often sudden, either for the better or the worse, which take place in them, and to mark the days on which these, particularly the favourable, changes happen. Having observed a crisis take place in more than one patient on the same day of the fever, they were led to pay attention to this day in other cases, and when they found a day, as the 4th, 7th, &c. of the disease on which a crisis happened more frequently than on most other days, this they termed a critical or judicial day. Thus the days, during which a fever lasts, came to be divided into those which are, and those which are not, critical, Those numbers which are made up by adding alternately four and three (with an exception I shall presently point out) denote the chief critical days, the 4th, 7th, 11th, 14th, &c.*

* Dr. Cullen considers all the uneven days, the 3d, 5th, &c. to the 11th, as critical days. After the 11th he regards every third day as critical, the 14th, 17th, and 20th. He marks no critical day beyond the 20th. " Because (he observes) though fevers are sometimes " protracted beyond this period, it is however more rarely, so that " there are not a sufficient number of observations to ascertain the

The other days on which crifes frequently happen are termed, by Galen, coincidental; and are efteemed an inferior clafs of critical days, becaufe on them crifes do not happen fo often as on the true critical days. When crifes happen on the coincidental critical days, Galen taught that the natural courfe of the difeafe is difturbed by fome irritation of the fyftem, or by a new attack; thus he calls the 7th a good critical day, but the 5th a bad one; for he fuppofed that a favourable crifis happening on a coincidental, was lefs to be depended upon, than that happening on a true critical, day.*

In the firft week, or, as it is called, feptenary, there are many coincidental critical days, becaufe, according to the Ancients, the violence of fevers which run their courfe in fo fhort a time, often difturbs the crifis which ought only to happen on the 4th or 7th day. In the fecond feptenary, the ninth is efteemed almoft the only coincidental critical day; thus it is, that after the 14th day, the coincidental critical days are of little confequence, the crifes generally happening on or about the true critical days.

" course of them; and further, because it is probable that in fevers " long protracted, the movements become less exact and regular, and " therefore less easily observed." See Dr. Cullen's First Lines, vol. i.

* The opinion that the course of the fever is disturbed when the termination happens on any other but a critical day, seemed farther confirmed by the observations of Hippocrates; from which it appears, that although the fatal, like the favourable terminations, generally happen on critical days, yet a much larger proportion of the former, than of the latter, happen on the non-critical days. Thus, Dr. Cullen remarks, all the terminations of fevers, mentioned in the writings of Hippocrates, which happened on the 6th day, were either fatal, or not finally salutary.

Hippocrates obſerved, that the criſes happened very often on the fourth day of the firſt and ſecond week, that is, on the 4th and 11th days of the diſeaſe. Theſe days he therefore eſteemed of much importance in fevers. But as he obſerved the criſis to happen very frequently on the 17th day, he conſiders this the 4th day of the third week, ſo that he makes the third week begin on the ſame day on which the ſecond ends. Then the 20th day, not the 21ſt, is the laſt day of the third week, and this alſo he thought a chief critical day; of all theſe days criſes are ſaid to happen moſt frequently on the 17th.

The critical days which follow the 20th are the 24th, 27th, 34th, 40th, not the 41ſt, which is the 7th day from the 34th, for as the third week begins on the ſame day on which the 2d ends, ſo the 6th begins on the ſame day on which the 5th ends; thus we count but ſix days for each of theſe weeks. The ſame happens in the 9th, 12th, and every ſucceeding 3d week, therefore the 60th, 80th, &c. days, are critical days.

Notwithſtanding what is here ſaid, Hippocrates remarks, that fevers, unleſs they leave the patient on uneven days, uſually return; the moſt favourable termination therefore generally takes place on uneven days. In ſome places he calls the 21ſt a critical day; theſe paſſages are by many believed to be ſpurious. This, ſays Van Swieten, is very probable, ſince there is no mention of the 21ſt day in the hiſtories of the caſes given in his book of epidemics.

In the doctrine of critical days, as delivered by Hippocrates, however, there are certainly contradictions; this Dr. Jackſon attributes to his having related ſome caſes from memory, and others only in part given him by different perſons; he obſerves alſo, that when the fever began in the evening, or during the night, Hippocrates generally reckoned the follow-

ing the firſt day of the diſeaſe. Dr. Jackſon adds, that the 21ſt is too frequently mentioned in the writings of Hippocrates as a critical day, to be conſidered, as Van Swieten and Dr. Cullen ſuppoſe it to be, an error in the original manuſcript. Dr. Cullen aſcribes many of the contradictions in the doctrine of critical days to the opinion of Hippocrates reſpecting the ſuppoſed power of numbers.

Certain terminations, according to the Ancients, moſt frequently take place on certain critical days; thus Galen ſays a fever ſeldom terminates by ſweat on the 4th day, and Hippocrates omits this day in enumerating the days on which fevers generally terminate by ſweat. It was ſuppoſed indeed that fevers ſeldom terminate by ſweat on an even day; and in the aphoriſm juſt alluded to, Hippocrates calls the 21ſt, not the 20th, a critical day. Sweats, he obſerves, in febrile patients are good, if they begin on the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 21ſt,* 27th, 31ſt, or 34th days, for the ſweats which happen not on theſe days denote length of the diſeaſe, difficulty, and return of it.

It was alſo taught by the Ancients, that each critical day ſerves for indicating what may be expected on the next; in this way the doctrine aſſiſts the prognoſis, and critical days have received the name of judicial or indicating.

If on a critical day the patient finds himſelf better, although

* It has already been observed that Dr. Cullen supposes the 21st day by mistake put for the 20th. He alledges that in continued fevers the tertian type prevails to the 11th day, and from this day to the 20th the quartan type. But, admitting what he says of the 21st day to be just, he cannot reconcile his view of the doctrine of critical days with what is said of the 4th day in the writings of Hippocrates; unless we admit what he alledges, which is probable, that the writings attributed to Hippocrates are in fact the works of different people, and that the most genuine of them have suffered corruptions.

on the next day he relapſes into his former ſtate, the phyſician may expect a more conſiderable remiſſion on the following critical day. On the contrary, if the patient finds himſelf worſe on a critical day, a ſtill more unfavourable change is to be looked for on that which follows, although during the intermediate days the ſymptoms are milder. Thus every critical day is an indicating day to that which ſucceeds it.

Admitting this, it follows that by carefully attending to the ſeverity of the ſymptoms on theſe days, or the degree of relief obtained, we may not only form a conjecture reſpecting the termination of the fever, but alſo reſpecting its diſtance. If on the critical days the violence of the ſymptoms be much increaſed, we dread a fatal termination, and we judge this nearer or more diſtant according to the degree of exacerbation which takes place; on the other hand, if a remiſſion of the ſymptoms happens on the critical days, we expect a favourable termination, and judge of its diſtance from the degree of the remiſſion.

In proportion as the diſeaſe is ſlower in its progreſs, the critical days are more diſtant from each other: thus in fevers which do not exceed three weeks, the 4th, 7th, 11th, &c. are critcal days; but if the diſeaſe extend itſelf beyond three weeks, then only one critical day in the week is to be looked for; laſtly, when the diſeaſe continues above forty days, Hippocrates eſteems only every 20th day critical, to wit, the 60th, 80th, and 100th, &c. In lingering fevers the criſis does not happen preciſely on the day called critical, but about that day.

Such is the doctrine of critical days delivered by the Ancients, and we do not find in modern authors any addition of conſequence, if we except what is ſaid of the application

of this doctrine to intermittents of complicated types by Dr. Jackſon, in his account of the diſeaſes of Jamaica.

The reduplication of paroxyſms, which often takes place in intermittents, occaſions ſome difficulty in applying the doctrine of critical days to them. Dr. Jackſon, in making this application, conſiders a double intermittent as two fevers, the one conſiſting of the original, the other of the new, paroxyſms.

"Thus if the fever (he obſerves of tertians) which began "on the odd day was critical, that is, if the paroxſym of "the odd day terminated the diſeaſe, the criſis was neceſſarily "on an odd day; but if that fever, (namely that conſiſting "of the paroxyſms which ſupervened upon the original ones) "the firſt attack of which was upon the even day, conſiſted "of an equal number of paroxyſms with the other, or con-"tinued after that had ceaſed, the criſis was then on an "even day, reckoning from the beginning of the illneſs, "though ſtill on an odd day, dating from the commencement "of the ſecond fever. It was the obſervation of this fact "which firſt gave me the idea of calculating the critical days "by the periods of the diſeaſe."

Dr. Jackſon always reckoned the period of the tertian 48 hours, allowing that time for every revolution, although it was ſometimes completed in leſs. As for quotidians, he obſerves, their criſes were generally on an odd day. It is not to be overlooked that in double tertians, on whatever day the criſis happens, Dr. Jackſon's mode of reckoning makes it an odd day.

By ſimplifying intermittents in this way, he obſerves, their criſes will be found to happen as regularly on the critical days as thoſe of continued fever. Of ſixty caſes, which under his care terminated favourably, ten terminated on the 3d day, ten on the 5th, twenty on the 7th, ten on the 9th,

five on the 11th, three on the 13th, and two on the 17th. This nearly coincides with what Hippocrates ſays of the days on which fevers terminate by ſweats, which has juſt been quoted.

"Of nine caſes which terminated fatally, (Dr. Jackſon "continues) one terminated on the 6th, one on the 7th, ſix "on the 8th, and one on the 10th." The even days, he obſerves, were fatal in the proportion of three to one, which he accounts for in the following manner. The paroxyſm which deſtroyed life, like moſt other changes, took place on the odd day; this paroxyſm ſeemed to decline after the uſual duration. It left the body in ſome meaſure free from diſeaſe, but ſo completely deranged the vital functions, that life, although it went on for a little, could not be long ſuſtained, ſo that death generally happened on the next, that is, the even day; although it was the conſequence of a violent paroxyſm which had taken place on the odd day. It also ſometimes happened that the patient was tolerably well after this ſevere paroxyſm, but a new one recurring after a ſhort interval, ſpeedily proved fatal on the even day. "Hence "we may ſee (he obſerves) why the patient ſometimes died "on the odd day when the fever was very violent, for then "he died in the height of a ſevere paroxyſm, often carried "off by convulſions, apoplexy, or ſome other accident."

Dr. Cleghorn has obſerved of complicated intermittents, that the great changes of the fever are always moſt apt to happen on that day on which the moſt ſevere paroxyſm takes place, whether this be the odd or the even day. This obſervation is eaſily reconciled with Dr. Jackſon's, as Dr. Cleghorn reckons in the uſual way without ſimplifying the complicated types.

It is remarkable, that we ſtill find ſomething in the ſeverity of the paroxyſm which diſpoſes to health. It was formerly

obſerved that in double tertians, the moſt ſevere paroxyſm is generally followed by the moſt complete apyrexia, and that in intermittents in general an unuſually ſevere paroxyſm often proves the laſt, the patient remaining well after it.

Many of the firſt phyſicians of antiquity endeavour to aſſign the cauſe of theſe periodic movements in fevers. Their opinions, however, are now juſtly regarded as groundleſs, and many of them indeed are quite whimſical. The moſt ancient opinion was founded on the Pythagorean doctrine of the power of numbers. Hippocrates ſeems to have been of this opinion; Galen diſclaims ſo abſurd a doctrine, and conceives that the criſes of fevers are cauſed by the changes of the moon. This opinion long met with the general aſſent of medical writers, and we ſhall find that an opinion ſimilar to it, and claiming the authority of extenſive obſervation has lately been maintained.

CHAP. III.

Of the Morbid Appearances *diſcovered by* Diſſection *in thoſe who die of* Intermitting Fevers.

Many diſeaſes prove fatal, without leaving any trace to be diſcovered by diſſection. This, ſtrictly ſpeaking, is true of intermitting as well as of continued fever. Various morbid appearances indeed are obſerved in thoſe who die of agues;

none of them however can be regarded as eſſentially connected with the fever; none of them ſeem at all connected with its cauſe, nor are there any which can be regarded as its immediate conſequence. Intermittents are often the cauſe of other diſeaſes, indurations of the different viſcera, &c. and in this view may be regarded as the cauſe of the morbid appearances belonging to them. But we muſt be careful not to confound theſe fevers with their conſequences, which has given riſe to the opinion of intermittents depending on certain ſtates of the bile, and other ill-founded hypotheſes. I have had occaſion to enumerate the diſeaſes moſt frequently complicated with agues; their effects in the different cavities of the body, we find mentioned by writers as the conſequences of intermittents.

The ſtomach, inteſtines, omentum, and meſentery, are frequently found inflamed, or of a dark colour, and ſometimes ſphacelated. The omentum and meſentery ſometimes appear waſted; in other caſes have tumours formed on them. The ſtomach and inteſtines are often enlarged, the conſequence of having been diſtended with air; and in various parts of the latter, preternatural conſtrictions are frequently obſerved. The gall bladder is often turgid, and an unuſual quantity of bile is found in the ſtomach and inteſtines. The liver is frequently indurated and enlarged, ſometimes diminiſhed and of a whitiſh colour, and it has now and then been found, only ſix or eight hours after death, ſoft, and it is ſaid, putrid. In ſome caſes it ſeems gorged with blood, the venæ portarum being much enlarged; in others, it is tinged with bile. The pancreas is alſo found enlarged, and ſometimes ulcerated, more frequently indurated. The ſpleen is particularly liable to be affected in intermittents. It is often enlarged, frequently weighing many pounds. Its ſtructure has ſometimes been ſo completely deſtroyed, that

it prefented the appearance of congealed blood wrapt in a membrane. More frequently it is indurated; in this ftate it has got the name of ague cake, being felt by the patient himfelf through the integuments of the abdomen. This affection of the fpleen is particularly apt to occur in the bilious remittents of tropical climates. Strack thinks that children are more liable to it than adults. The mefenteric and other fmaller glands of the abdomen are alfo frequently found indurated.

Traces of inflammation in the lungs and pleura frequently appear, and the former are fometimes found foft and gangrenous. The heart too is often flaccid and enlarged, and the veffels of the lungs turgid, with dark coloured blood. This ftate of the heart and blood veffels is the confequence of the circulation in the lungs having been impeded for fome time before death, fo that it is moft remarkable in thofe cafes where the dyfpnœa has been greateft. When the fkin is tinged with yellow, the ferum in the thorax and other cavities is of courfe of the fame colour.

Morbid appearances of the head in intermittents are lefs frequently obferved. Polypi are fometimes found in the finufes. But thefe are frequently met with, of whatever difeafe the patient dies. Traces of inflammation, and even abfceffes, are now and then met with in the brain.

If the patient die in the cold fit, an unufual accumulation of blood, it is faid, is obferved in internal parts. This is the only morbid appearance, if we except a general ftate of flaccidity when the ftrength has been greatly exhafted, that can be regarded as effentially connected with the fever, and it has probably been magnified for the purpofe of ferving certain hypothefes.

CHAP. IV.

Of the Causes of INTERMITTING FEVERS.

In ſpeaking of the remote cauſes I ſhall not always treat ſeparately of what have been termed the prediſpoſing and exciting cauſes, the circumſtances which render the body liable to the diſeaſe, and thoſe which excite it, ſince in many inſtances it is impoſſible to ſay to which of theſe claſſes any particular cauſe belongs; in many diſeaſes the ſame circumſtances acting ſometimes as prediſpoſing, at other times as exciting, cauſes.

In intermitting fevers this diviſion of the remote cauſes is leſs objectionable than in moſt other diſeaſes; for various obſervations ſeem to prove that theſe fevers ariſe chiefly, if not ſolely, from one exciting cauſe, effluvia from marſhy grounds, called by medical writers the marſh miaſma.

SECT. I.

Of the prediſpoſing Cauſes of Intermitting Fevers.

Of the various circumſtances favourable to the action of the exciting cauſe of intermittents, there are ſome which operate by rendering the body more ſuſceptible of its action;

others which ſeem to act by increaſing the power of the cauſe itſelf; and ſome which act in both ways. It will be the moſt diſtinct plan, and ſave repetition, to conſider the whole, under the head of marſh miaſma, as circumſtances favourable to its action in producing intermitting fever.

SECT. II.

Of the exciting Cauſes of Intermitting Fevers.

We have many inſtances of the ſtriking effects of an atmoſphere loaded with noxious vapours. White females born and conſtantly reſiding in the lower diſtricts of the province of Georgia, it is ſaid, have ſeldom lived beyond the age of 40; males ſometimes approach to 50. Similiar obſervations have been made reſpecting ſome parts of Egypt near the banks of the Nile.* There are ſwampy ſituations in the Carolinas and Virginia which are deſtructive of life in a ſtill greater degree: "I am credibly informed (ſays Dr. "Jackſon †) that there is not on record an inſtance of a "perſon, born in Peterborough in Virginia, and conſtantly "reſiding in the ſame place, who has lived to the age "of 21."

The influence of marſh miaſma in producing agues was firſt obſerved by Lanciſi, about the middle of the ſeven-

* Bruce's Travels to Abyssinia, &c.

† Dr. Jackson's Account of the Diseases of Jamaica.

teenth century, and is now ſo generally admitted, that it is unneceſſary to adduce many facts in ſupport of it.

It is almoſt an univerſal obſervation, indeed, that intermittents prevail in low marſhy countries. Our climate, on the whole, cannot be regarded as favourable to the production of theſe fevers. In Lincolnſhire, however, and the other fenny counties, there are few diſeaſes more frequent. Near ſtagnant pools, eſpecially when the weather is hot, they are often epidemic.

In other countries we have more remarkable proofs of the effects of marſh miaſma. In Egypt, after the Nile retires, leaving the wet ground covered with a variety of putrifying animal and vegetable ſubſtances, theſe fevers begin to prevail. We are informed that the Arabs, when they wiſh to be revenged on the Turks of Buſſarah, break down part of the banks of the Euphrates, by which the deſerts in the neighbourhood of that city are laid under water. The ſtagnating water and dead fiſh ſoon become putrid, and dreadful fevers, generally of the remitting form, are the conſequence. The fevers induced by a ſingle inundation of theſe deſerts have been known to deſtroy between twelve and fourteen thouſand of the inhabitants of Buſſarah.*

When ſo powerful a cauſe is applied, we ſeldom meet with intermittents. Intermittents and remittents ariſe from different degrees of the ſame cauſe. "In Jamaica (Dr. John "Hunter obſerves) the fevers in the moſt healthy ſeaſons are "generally intermittents; in the rainy and other unhealthy "ſeaſons, remittents.†

* See the Observations on the Fever of Bussarah, above alluded to, in the Transactions of a Society for the Improvement, &c. for 1793.

† See the observations of Sir J. Pringle on the diseases of Flanders, and other works on this subject.

It is generally obſerved that during the more temperate ſeaſons the regular intermittents prevail, and for the moſt part yield readily to the ordinary means. In proportion as the ſeaſon becomes hotter and more moiſt, a reduplication and protraction of the paroxyſms take place, till the diſeaſe comes at length to differ but little from a continued fever. The dreadful remittent of Buſſarah is always moſt feared in the hotteſt ſeaſons. And in the higher latitudes, even when the autumnal fevers are of the moſt continued kind, if they ariſe from marſh miaſma, they begin to intermit when the cold weather ſets in, and before the winter is far advanced, often terminate in ſimple tertians or quartans.

The true intermitting fever, therefore, is a diſeaſe neither of very warm nor very cold climates. Bontius,* Lyſons,† Clark,‡ and others remark, that it is ſeldom met with near the equator. The remittent may be regarded as the endemic of ſultry climates. Upon the whole, however, of the climates which may be called temperate, the warmeſt are the moſt favourable to the production of intermittents. In ſuch climates as our own they generally prevail moſt when the weather has been for ſome time unuſually warm, particularly when the rains ſuddenly ſet in after a warm ſummer.

Sudden changes of weather, whether from hot to cold, or the contrary, are favourable to the production of intermittents. It is conſtantly found, ſays Raymond § of the intermittents of Mettleburgh, that if the cold and wet weather of autumn ſuddenly ſucceed an unuſual dry and warm

* De Medicina Indorum.

† Essays on Fevers, &c.

‡ On the Diseases in long Voyages to hot Climates.

§ Raymond on the Intermittents of Mettleburgh, in Baldinger's Sylloge Opusculorum.

ſummer, theſe fevers rage more generally, and ſhow a greater tendency to become malignant.

It is particularly obſerved alſo by army phyſicians, that agues are frequent if the warm day is ſucceeded by a cold damp night. This often happens in marſhy countries: for the exhalations which riſe during the day being condenſed when the influence of the ſun is withdrawn, the ground is covered for ſome hours with a thick miſt.

Damp applied to the body is particularly favourable to the operation of the marſh miaſma. It is obſerved that thoſe who live on ſmall eminences, though equally expoſed to the marſh miaſma, are leſs liable to agues; and that people inhabiting ground floors are more liable to them than thoſe in higher parts of the ſame houſes. Sir John Pringle even obſerves, that of two battalions, quartered near each other, and on ground of the ſame height, the one in a town, the other in the peaſants' houſes in the country, the latter was more ſubject to agues, from the greater dampneſs of the cottages. In the works of Dr. Donald Monro, Dr. Brocklesby, and other army phyſicians, we find ſimilar obſervations.

It has been urged, that we cannot ſuppoſe moiſture favourable to the production of agues, as they are more frequent when there is but little water remaining on the ſurface, than when the whole country is covered with it. The inhabitants of Egypt, for example, are but little troubled with intermittents while their country lies under water; it is after the Nile retires within its banks that they chiefly prevail. And in the Weſt Indies, it is obſerved, that while the pools are deep the fevers are either few, or of a milder nature. It is generally after their bottoms appear, that the worſt fevers begin to rage.

But when the country is under water, there is, of courſe, leſs marſh miaſma than when the moiſt ground is expoſed to

the action of the ſun. Beſides, the rapidity of evaporation we know is proportioned to the temperature and extent of ſurface. When the ground is wholly overflowed it preſents a ſmooth and conſequently the leaſt poſſible ſurface, while, from the water being nearly pellucid, the rays of the ſun have but little effect in raiſing its temperature * When the water is drained off, the ſurface is increaſed by its being rendered unequal, and the ſun acting now, not on the pellucid water, but the moiſt ground, greatly increaſes its temperature, which is farther increaſed by the putrefaction that in ſuch circumſtances proceeds rapidly. We frequently obſerve a thick miſt over damp ground, but ſeldom on the ſurface of water.

Moiſture ſeems to have ſo great a ſhare in the production of agues, that at firſt view we are inclined to attribute the whole tendency of marſh miaſma to the damp that accompanies it. Dr. Moſeley † remarks, that agues are frequent during the rainy ſeaſon in warm climates where there are no marſhes. And Dr. Lind ‡ obſerves, that a perſon may be ſeized with an ague in the moſt wholeſome ſpot of ground in England. It is not a fair objection to this opinion, that an atmoſphere loaded with moiſture is not found to produce agues at ſea, ſince on ſhip-board every thing is much freer from damp than in damp ſituations on land.

There are many obſervations, however, which ſeem to prove, that whatever effect damp may have in producing

* It appears, from the experiments of Mr. Melvil, in the Edinburgh Literary Eſſays, that light only increases temperature in proportion as it is obstructed, reflected, or refracted.

† See Dr. Moseley on Tropical Diseases.

‡ See the Appendix to his Essays.

agues, it is not the only, and probably not the chief, circumſtance to which marſh miaſma owes its effects. Dr. Lind remarks, that ſhips lying at a conſiderable diſtance from a ſwampy ſhore, eſcape intermittents; while others lying nearer, about the diſtance of a mile, perhaps, are ſubject to them. We cannot in this caſe attribute them to the moiſture of the land breeze, ſince the thickeſt fogs on ſhip-board do not produce them. Many have doubted whether damp ever produces agues independently of marſh miaſma. That it renews them there can be no doubt.

It ſeems to be by the damp they occaſion that extenſive woods favour the action of marſh miaſma. They ſhed a conſtant moiſture on the ground, and prevent both the rays of the ſun from falling upon it, and the wind from paſſing over it. Beſides, they confine the moiſt air, ſo that thoſe who inhabit woody places are conſtanly expoſed to an atmoſphere loaded with moiſture.

Soldiers encamped in woods ſeldom eſcape agues. There is ample proof of this obſervation in the works of Sir John Pringle, Dr. Cleghorn, and others. It appears from other obſervations, however, particularly thoſe of Dr. Jackſon and Dr. Ruſh, that ſcattered woods are of ſervice, and in particular tend to prevent agues among thoſe who live in the open country. One very evident way in which they may have this effect, is by preventing the diffuſion of marſh miaſma. Army phyſicians, therefore, recommend having a wood, if poſſible, between marſhy grounds and an encampment.

If Dr. Ruſh's obſervations be juſt, this is not the only way in which they tend to prevent theſe fevers. It would lead into too tedious a diſcuſſion to conſider this ſubject at length; the reader may conſult his *Obſervations on the*

*Caufes of the Increafe of Intermitting Fevers in Pennfylvania.**

The banks of rivers, if not fwampy, have been recommended for the encampment of troops, with a view to prevent agues; the motion of the water occafioning a conftant circulation of air, and thus tending to carry off the noxious vapours.

There are few caufes which in a greater degree promote the action of marfh miafma than expofure to the night air. It appears from the obfervations of Mr. Badinock,† that this is a principal caufe of the bilious remitting fever of fultry latitudes; and to the fame caufe Bontius wholly attributes the worft fevers of Batavia.‡ It is well known, indeed, both in the Eaft and Weft Indies, that people are often attacked with agues from paffing a fingle night abroad, efpecially in the woods.

Dr. Hales, in the 1ft vol. of the Medical Mufeum, propofes wetting the body with falt water as a means of preventing the bad effects of expofure to the night dews of warm countries, and adduces fome facts in fupport of the benefit derived from this practice.

Refpecting the predifpofing caufes of intermittents in general, it may be obferved, that whatever tends to weaken the body, predifpofes to them, whether it be exceffive heat, or a cold and damp atmofphere, a poor and fcanty diet, or

* See the 2d vol. of Rush's Med. Inq. and Obs.

† See the 4th vol. of the Medical Observations and Inquiries.

‡ Of the baneful effects of the night air at Batavia Dr. Lind relates a striking proof. "During the sickly season, a boat, belonging to the Midway man of war, which attended on shore every night to bring fresh provisions, was three times successively manned, not one of her crew having survived that service."

gluttony and an abuſe of fermented liquors, too much exerciſe or habitual indolence, bad cloathing, ſtrong paſſions, long watching, the habitual uſe of irritating medicines, particularly ſtrong cathartics, and whatever elſe tends to diſorder the primæ viæ, an improper uſe of the warm or cold bath, ſuppreſſed ſweats or eruptions, or the ceaſing or increaſe of any habitual diſcharge. In ſhort, thoſe who live well and at eaſe, who are not given to exceſs in eating or drinking, nor diſturbed by ſtrong paſſions, and who uſe moderate and regular exerciſe, are leaſt ſubject to intermittents.

Some have thought that particular kinds of food prediſpoſe to theſe fevers. Aurivillius maintains that thoſe who live on pork and fiſh, are more ſubject to them than others; thoſe at leaſt are ſo, who live on food of a bad quality and difficult digeſtion.

Almoſt all the circumſtances which have been mentioned as favourable to the action of marſh miaſma are capable of renewing intermittents, independently of the cauſe which firſt produced them.

A curious circumſtance ſeems to deſerve a place among their prediſpoſing cauſes, which, like the doctrince of critical days, has not gained general credit; although, like that alſo, it ſeems to reſt on extenſive obſervation. Dr. Lind, Dr. Jackſon, and others, have made ſome obſervations relating to the influence which the changes of the moon are ſuppoſed to have in determining the acceſſion or renewal of fevers, particularly thoſe of warm climates.

After ſtating briefly what has been done by others on this ſubject, the latter obſerves, "In order to aſcertain the truth "of this conjecture, which I conſidered a matter of ſome "importance, I provided myſelf with the almanack of the "year 1776, and marked in the blank leaf of it the pre-"ciſe date of attack of all thoſe fevers which came under

"my care." On looking over thoſe memoranda at the end of the year, he found he had ſet down thirty caſes of proper remitting fever, twenty-eight of which made their attack on one or other of the ſeven days immediatly preceding new or full moon.

He continued the ſame plan through the following year, the reſult of which was ſimilar. Beſides the caſes of proper remitting fevers, there were alſo marked in the almanack many ſlight feveriſh diſorders, the acceſſion of which in like manner was for the moſt part in the ſecond and laſt quarters of the moon. The greateſt number of theſe acceſſions were within three or four days of the new or full moon, for the nearer theſe periods, the more frequent were the attacks.

Dr. Jackſon ſupports theſe obſervations by others, and from the manner in which they were made, there was little room for fallacy. Dr. Lind accounts for the frequency of fevers at the new and full moon by the greater height of the tides at theſe periods. This, however, the former thinks cannot be admitted, ſince the influence of the moon in fevers is as obſervable in inland ſituations as on the coaſt.* Concerning this ſubject, future and very extenſive experience muſt decide.

We know from the laws of gravitation, that at new and full moon every body in thoſe parts of the earth where the ſun at twelve o'clock of the day is a certain number of degrees above the horizon, has its weight twice in the courſe of the twenty-four hours more

* For further information on this subject, the reader may consult the work from which the above quotation is extracted, Dr. Jackson's Treatise on the Fevers of Jamaica; he may also consult Dr. Lind's Thesis, and Dr. Balfour on Putrid Fevers.

diminiſhed and more increaſed than when the moon is in its quarters, and the nearer the ſun is to the zenith at twelve o'clock, the greater it is evident this difference muſt be. What effect this may have on the human body, we neither can nor probably ever ſhall be able to determine. It is in vain to ſay that the difference is too inconſiderable to produce any effect, when we ſpeak of a ſtructure ſo complicated, in many of its parts ſo ſenſible, and of which it muſt be confeſſed we know ſo little. It is worthy of remark, that it is in thoſe parts of the world, where the difference of weight juſt alluded to is moſt conſiderable, namely, within the tropics, that the changes of the moon have been obſerved to influence the acceſſion of fevers. It is a curious fact, mentioned by Dr. Lind, that ſeveral ſailors and others were attacked with fevers during an eclipſe of the moon; that is, at the very time of full moon.

It is a common opinion, that ſalt water, mixed with the freſh water of marſhes, produces a more noxious exhalation than freſh water alone. Sir John Pringle conſiders this fact as undoubted. The opinion has gained ground by its having been found that a ſmall quantity of ſalt promotes fermentation. The author juſt mentioned, who made experiments in order to determine this point, obſerves, "Nothing could "be more unexpected than to find ſea ſalt a haſtener of "putrefaction; but the fact is thus—One dram of ſalt pre-"ſerves two drams of freſh beef in two ounces of water "about thirty hours uncorrupted, in a heat equal to that of "the human body; or what amounts to the ſame, this "quantity of ſalt keeps fleſh ſweet twenty hours longer than "pure water; but half a dram of ſalt does not preſerve it "above two hours longer than pure water. Now I have "ſince found (he adds) that twenty-five grains have little or

" no antiſeptic virtue, and that ten grains both haſten and " heighten the putrefaction."*

By others, however, it is aſſerted, that whatever be the ſeptic power of a ſmall quantity of ſalt, the admixture of ſalt water with the water of marſhes is not found to increaſe their tendency to produce intermitting fevers. And Dr. Jackſon remarks, that as far as he has obſerved, the uſual epidemic was leſs frequent and leſs formidable on the banks of rivers after their waters became mixed with thoſe of the ſea, than before this happened, unleſs the circumſtances were in other reſpects more favourable to the production of the diſeaſe.

He alſo affirms, that although ſea and river water are mixed together in various proportions in Savanna la Mar, in Jamaica, and in the numerous iſlands on the coaſt of the Carolinas, yet theſe places are ſeldom more unhealthy than where the lakes and rivers are unmixed.

Concerning the manner in which marſh miaſma acts in producing agues we can ſay nothing with certainty. Nor has it even been aſcertained, indeed, what the marſh miaſma is. We know that it is the effluvia, together with the moiſture, perhaps, of marſhy grounds; and this is all that we know of it. Is it the gas diſengaged in the proceſs of putrefaction?

Intermitting fever ſeems in general to ariſe from repeated expoſure to marſh miaſma. In moſt caſes we cannot obſerve that the patient at the time the fever makes its attack, is particularly expoſed to its action. Sometimes its effects are more ſudden. " In the month of Auguſt, 1765," Dr. Lind obſerves, " the thermometer often roſe to 82° in the

* Appendix to Sir John Pringle's Observations, &c.

"middle of the day, and the marines, who were exercised "early in the morning on the south sea-beech, from the "effects of the stagnant waters of an adjoining morass, suf-"fered much; half a dozen at a time were often taken ill "in their ranks when under arms."

I have already had occasion to observe, that the marsh miasma is generally regarded as the only exciting cause of intermitting and remitting fevers. Contagion, however, seems to have a claim to be ranked as such. With regard to intermittents it may be doubted if they ever arise from this cause. Trnka, in his elaborate treatise, entitled, Historia Febrium Intermittentium, quotes a variety of authors, with a view to prove that even they are sometimes contagious. As to remittents, they are frequently so, and in general the more so the more they assume the continued form.

CHAP. V.

Of the Treatment of INTERMITTING FEVER.

THE treatment of intermitting and remitting fever may be divided into two parts, that of the paroxysm, and that of the remission or apyrexia. The former is to be regarded as palliative only; it is on the treatment during the apyrexia or remission that we depend for the cure.

SECT. I.

Of the Treatment during the Paroxyſm.

Our view in the treatment of the paroxyſm is conſtantly to put a period to the ſtage which is preſent, by inducing that which naturally ſucceeds it, till a general ſweat comes on.

There are two indications, therefore, in the paroxyſm of an intermittent; to endeavour during the cold ſtage to induce the hot; and while the patient labours under the hot ſtage, to promote a free ſecretion by the ſkin. The following obſervations, however, muſt be kept in ſight; that although it is our view during the cold fit to induce the hot, we are not indiſcriminately to employ every means which tend to this effect. Many are otherwiſe ſo hurtful, that their bad effects more than compenſate for any advantage to be procured by ſhortening the cold fit. A ſimilar remark applies to the hot ſtage; all the means we employ at this period tend to promote a ſweat, but every thing which has this tendency is not proper.

1. *Of the Means to be employed during the Cold Fit.*

The patient's feelings generally point out the greater part of the treatment neceſſary in the cold fit. He ſhould be put to bed and kept warm, and ſome have recommended the warm bath. In warm climates it is both beneficial and

grateful to the patient to ſtretch himſelf out in the ſunſhine.

The moderate uſe of warm diluting, but not ſtimulating, fluids is proper. The latter encreaſe the ſymptoms of the hot fit. All kinds of aromatics, therefore, diſtilled liquors, and wines, ſhould be uſed with caution, and altogether forbidden when there is any tendency to the inflammatory diatheſis. Many do not allow drink of any kind in the cold fit, except to promote vomiting, as much fluid in the ſtomach and bowels generally increaſes the oppreſſion.*

It is common in all kinds of fever to acidulate the patient's drink. For this purpoſe cream of tartar, or the vegetable, vitriolic or muriatic acids are employed, and they are particularly uſeful when the ſtomach and bowels are loaded with bile. Theſe, however, and the other medicines, which have been termed refrigerant, are improper in the cold ſtage.

The moſt effectual means of bringing on the hot fit, is the operation of an emetic. This, if the diſeaſe be ſevere, ſhould be exhibited as ſoon as the cold ſtage is formed, if it has not been given before; for we ſhall find that the cold fit is ſometimes prevented by this means.† The antimonium tartariſatum is here the beſt emetic, and ſhould be given in pretty large doſes. Nauſeating doſes are more properly indicated in the hot ſtage. When ſpontaneous vomiting from bile or other irritating matter comes on, diluents only are neceſſary.

* See the observations of Dr. Cleghorn and others.

† For the use of emetics in the cold fit, the reader may consult many of the authors who have been mentioned. See also a paper in the 4th volume of the Edinburgh Medical Essays and Observations, by Dr. Thompson.

Purging in the cold ſtage is improper, and blood-letting altogether inadmiſſible. Bliſters are proper if coma or delirium attend. They may be applied to the back of the neck, or if theſe ſymptoms be conſiderable, the head may be ſhaved, and a large bliſter applied over it.*

Such are the few directions to be attended to in treating the cold fit of an intermittent. The practice in the hot ſtage is rather more complicated.

2. *Of the Means to be employed during the Hot Fit.*

The indication of cure in the hot ſtage of intermittents, I have already had occaſion to obſerve, is to promote a flow of ſweat. This is done,

1. By removing every cauſe of irritation.
2. By dilution.

* There is a curious paper, by Mr. Kellie, in the 19th vol. of Dr. Duncan's Medical Commentaries, concerning the application of tourniquetes to the limbs, with a view to prevent or remove the cold fit of agues. From the observations which he made, he drew the following conclusions:—1. That at any time during the cold fit of an intermittent, if tourniquetes be so applied as to obstruct the circulation in two of the extremities, in three minutes thereafter the hot stage will be induced.—2. That if the tourniquetes be applied previous to the accession of the paroxysm, the cold stage will be entirely prevented.—3. That where the cold stage of an ague is either thus shortened or prevented, the following hot stage is rendered both milder and shorter. Mr. Kellie's observations deserve attention; they are too confined however fully to ascertain either the success or safety of his proposal. I am informed that his experiments have been repeated at the infirmary of Edinburgh without success. Mr. Kellie has since published a work on the use of tourniquetes in various diseases.

3. By the uſe of ſudorifics.

4. By moderating excitement when the ſymptoms of ſynocha attend.

5. By ſupporting the ſtrength when debility prevails.

1. Every cauſe of irritation tends to protract the hot fit. Cathartics, it has juſt been obſerved, are improper in the cold fit; they are neceſſary in the hot, unleſs the bowels are moved ſpontaneouſly; but much purging, as counteracting the tendency to ſweat, is improper.

Of cathartics, calomel has lately been much recommended in fevers of all kinds, especially by the practitioners of warm climates; when the primæ viæ are oppreſsed with bile it should always at least form a part of the cathartic.* It will presently appear that small doses of antimonium tartarisatum are, for another purpose, exhibited in the hot ſtage of intermittents. These often sufficiently excite the bowels.

The exhibition of emetics in this disease sometimes renders that of other medicines troubleſome. But as emetics are not so well suited to the ſecond as the firſt ſtage of intermittents, the only difficulty ariſes from the operation of the emetic given in the cold fit ſtill continuing. When this happens, if the bowels are languid we must have recourſe to clyſters. They are not however to be depended on, as their action is chiefly confined to the larger inteſtines, and a cathartic ſhould be exhibited as ſoon as it can be made to lie on the ſtomach.

Various cauſes of irritation will be pointed out when we ſpeak of continued fever, as it is more particularly in it, that their effects are felt. As far as theſe operate in the pa-

* Dr. Lysons's Treatise on the use of Camphor and Calomel in Fevers.

roxysm of an ague, the obſervations which will then be made are applicable to it.

2. During the hot fit the patient should not be refuſed the uſe of diluting fluids. Many indeed do not permit him to drink till the ſweating ſtage commences. But thirſt is hurtful, and unleſs the quantity be very large, ſuch fluids in the hot fit will not be found to increase the oppreſſion, and they tend to promote ſweat.

In the cold ſtage, and while the hot is forming, whatever drink the patient uſes should be tepid: when the hot ſtage is perfectly formed, cold drink is both more grateful, and more generally beneficial. When a moiſture appears on the ſkin, the drink ſhould again be tepid.

In the treatment of all fevers we ſhould have in view that the evacuent and diluent plan is debilitating, and must therefore be uſed with caution, unleſs the excitement is conſiderable. It is alſo to be remembered, in attempting to diſcharge the bile from the ſtomach and inteſtines, that purging, and ſtill more, vomiting, tend to emulge the biliary ducts, and ſeem often to excite the liver to a more copious ſecretion. We might therefore endanger the patient's life, were we to persevere in attempting entirely to free his ſtomach and intestines of a matter which, in consequence of the means we employ, is poured into them in greater qnantity.

In the hot as in the cold fit, when a vomiting and purging of bile occur ſpontaneouſly, diluents only are neceſsary; and if theſe motions prove obſtinate, they muſt be allayed (when there is reaſon to ſuppoſe that the greater part of the bile is diſcharged) by opiates; which we ſhall preſently ſee are otherwiſe uſeful at this period.

3. I have already had occaſion to obſerve that vomiting is

not ſo well ſuited to the ſecond as the firſt ſtage. Nauseating doſes, particularly of antimonial emetics, are more ſerviceable in the hot fit, eſpecially when combined with opium, and when their operation is determined to the ſkin by gentle warmth.

As our view here is to promote perſpiration, James's Powder, which is ſuppoſed by many to be better calculated to excite the ſkin than the other preparations of antimony, is generally preferred to the antimonium tartariſatum.* The Pulv. Ipecacuanhæ compoſitus is uſed with the ſame view, but ſeems inferior. Opium alone, when nothing counterindicates its uſe, has been found a powerful means of ſhortening the hot fit.† It ſeems to act chiefly by promoting perſpiration.

The cold affuſion has been employed in intermitting fever; and from what is ſaid in the 31st and following pages

* The preparation of James's Powder was long a secret, and procured its inventor much reputation and gain. It is now known to be a preparation of antimony, and perhaps in few respects superior to the antimonium tartarisatum. Till lately James's Powder was supposed to be the calx antimonii nitrata. Dr. Pearson's experiments, which have generally been supposed to place the nature of those powders beyond a doubt, make it the pulvis antimonialis of the London Pharmacopeia.—See Dr. Pearson's paper in the Philos. Trans. for 1791.—Dr. Higgins used to observe in his lectures, that James's Powder is prepared from a mixture of crude antimony pulverised and chared bones, calcined in a reverberatory furnace.

It is said Dr. James generally gave his powder conjoined with calomel, to which many attribute the success of this medicine in the hands of its inventor.

† See the observations of several of the authors who have been mentioned, particularly Dr. Lind, for the use of opium in intermitting fever.

of Dr. Currie's Treatiſe,* it is probable that it will be found a very uſeful remedy in the hot fit. It is chiefly to be employed when the excitement is conſiderable without damp on the ſkin. On the effects of the cold affuſion in intermittents, however, obſervations are ſtill wanting. Dr. Currie alſo uſed it with ſucceſs as a means of preventing the acceſſion of the paroxyſm, when the ſtrength was ſufficient to bear it in the abſence of fever.

4. Wherever the inflammatory diatheſis is conſiderable, not only the duration of the paroxyſm, but that of the fever, will be protracted; and as this is the moſt frequent cauſe of obſtinacy in intermittents, the means of relieving it may be regarded as the moſt important part of the treatment during the paroxyſm; and, indeed, when theſe are not indicated, and the ſymptoms are moderate, little in general is neceſſary at this period, except what the feelings of the patient point out; for although the foregoing means always tend to ſhorten the hot fit, it is chiefly when they counteract the inflammatory diatheſis, that they are to be regarded as eſſential to the cure of the diſeaſe.†

The means of relieving this diatheſis are different, according to its degree. Various ſaline preparations are recommended with this view, and are often ſufficient, when the inflammatory ſymptoms are not urgent. Whatever other means we employ, indeed, theſe always make a uſeful addition to them. Saline draughts, nitre, and the Aq. Ammonia acetata are the beſt.

* Dr. Currie's Medical Reports on the effects of water, cold and warm, as a remedy in fever, and other diseases.

† This observation will be sufficiently illustrated in considering the use of the bark in intermittents.

To the ſame claſs of medicines belong the vegetable acids. The mineral acids poſſeſs little refrigerant power.

But when the excitement is conſiderable we muſt have recourſe to more powerful remedies. I have already had occaſion to ſpeak of diaphoretics. Antimonial diaphoretics are always proper when the excitement is decidedly above the healthy degree. I have alſo had occaſion to make ſome obſervations on cathartics, the moderate uſe of which is then doubly indicated.

No other remedy ſo effectually diminiſhes excitement as blood-letting. It is not be ranked among the curative means in the treatment of intermitting fever, but regarded as the remedy on which we chiefly depend for counteracting a certain diathesis that tends to protract the diſeaſe. This obſervation muſt be kept in view, ſince it has been aſſerted by ſome that the cure of intermittents may be attempted by blood-letting alone; which has often led to improper modes of practice. Mild vernal intermittents, indeed, which are generally more or leſs of an inflammatory nature, now and then yield to this remedy; but the only inference from this is, that ſuch fevers, being very mild, require no remedy after the inflammatory tendency is removed.* So far indeed is blood-letting from being the remedy on which we depend for the cure of agues, the truth ſeems to be, that except in thoſe caſes where actual inflammation, or that ſtate which diſpoſes to it, is preſent, it is univerſally hurtful in theſe fevers. Even Sydenham,

* I use the terms inflammatory diathesis and increased excitement as nearly synonimous, for although a tendency to inflammation often exists without increased excitement, yet it is only when attended by the latter that we can with certainty determine its presence. There is reason, however, to suspect its presence in all cases in which an intermittent proves obstinate, if the epidemic be of an inflammatory

who recommends venesection with so much freedom, observes, that in young people a quartan, which would have terminated in six months, is by blood-letting protracted to twice that period: and in old people the disease is not only protracted, but life endangered, by the rash use of the lancet.

It is impossible to lay down any rule respecting blood-letting, in the different species of intermittents, which will be found generally applicable. The attempt to do this has involved the subject in much perplexity. We must consider what the symptoms are which render blood letting necessary; at what period of the disease it is proper to employ it; what the consequences to be dreaded from it are; and in what circumstances, these consequences are most apt to take place.* I shall make a few observations on each of these heads.

Wherever the countenance is flushed, the head-ache considerable, the delirium obstinate, or dyspnæa comes on with a full and hard pulse, blood-letting is necessary. When along with this state of the pulse, although unaccompanied by the foregoing symptoms, the fever assumes more of the continued form, we must have recourse to it.*

It is difficult to point out the degree of excitement which, independently of local affections or the fever assuming a more continued form, warrants the employment of blood-letting. It must be kept in view, that, for two reasons,

nature, and the season of the year and state of the weather be such as dispose to inflammatory affections. In such cases although there be little increase of excitement a moderate blood-letting is generally attended with good effects.

* When the delirium or difficuly of breathing is urgent, as sometimes happens, with a low pulse, and in cases where the strength of the patient has been much reduced, either by the continuance of the disease, or previous evacuations, local is preferable to general blood-letting.

a leſs degree of excitement warrants blood-letting in intermitting than in continued fever. The removal of increaſed excitement, is of more importance in the cure of the former; and in it alſo we have leſs reaſon to dread the debilitating effects of blood-letting.

Where there is no increaſe of excitement, and ſtill more where the pulſe is ſmall, frequent, and intermiting, it is never to be employed.

With regard to the period of the diſeaſe at which we ſhould employ blood-letting, as the continuance of every diſeaſe tends to debilitate, the ſymptoms which indicate this remedy are ſeldom preſent after it has laſted for a conſiderable time. Except, therefore, a new diſeaſe requiring blood-letting ſupervene, it is ſeldom proper in protracted caſes. At the firſt attack, on the contrary, it is often neceſſary, particularly in the ſpring, or at other times when the epidemic has an inflammatory tendency.*

Blood-letting in the hot fit of agues was regarded by the Ancients as a dangerous practice; ſucceeding experience, however, has contradicted this maxim. It ſhould be avoided during the cold and ſweating ſtages, and at the time the paroxyſm is expected.

If we reflect on the intention of blood-letting in intermitting fever, indeed, ſo far from following the Ancients, we ſhall find reaſon for confining this remedy to the hot fit. It has already been obſerved, that blood-letting is not to be regarded as one of the means of a radical cure It has been a favourite opinion in medicine, and ſtill is with many, that fevers depend upon a noxious matter exiſting in the fluids,

* See Dr. Curtin's letter to Dr. Duncan, in the 9th vol. of the Medical Commentaries, and the observations indeed of most authors who treat of the fevers of warm countries.

which may be evacuated by blood-letting. We have every reaſon to believe, however, that the effect of blood-letting in all kinds of ſimple fever, that is, of fever which is neither in any degree produced by, nor has itſelf cauſed, any local affection, is merely that of diminiſhing excitement, which, although not ſo violent as to threaten immediate danger, if much increaſed, always induces a degree of correſponding debility, and even when but little above the healthy ſtandard, tends to protract intermittents.

During the remiſſion or apyrexia, the excitement is never conſiderable, and blood-letting at this period will not prevent increaſed excitement during the enſuing paroxyſm with the ſame certainty, that it will relieve it when preſent. Beſides, in proportion as the excitement is encreaſed, the patient bears the loſs of blood better.*

In intermitting fever, therefore, the moſt proper time for letting blood is during the hot fit of the firſt paroxyſms.

The certain conſequence of repeated blood-letting, eſpecially when not employed with judgment, is debility, which is now and then ſo ſudden, that patients have ſometimes expired almoſt immediately after veneſection. This is a rare occurrence, but the powers of life are frequently ſo impaired as to render the fever more obſtinate and dangerous; or even to undermine the conſtitution, and induce dropſy or other diſeaſes of debility.

A conſequence of blood-letting, not to be overlooked in diſeaſes of long continuance, is plethora. It is well known that the quantity of blood formed by the ſyſtem is generally

* Dr. Lind regretted that he had bled a patient during the apyrexia; the event was unfortunate, and he owns that an experienced physician thought it probably would have been otherwise had the blood been taken during the paroxysm.

proportioned to the demand for it, and, conſequently, that habitual blood-letting ſeldom fails to produce habitual plethora.

There are few remedies whoſe good and bad effects more frequently ſeem to balance each other; ſo that caſes occur in which the moſt experienced and acute phyſicians can hardly determine whether it ought to be employed or not. The general rule is, that wherever debility is preſent, or with certainty expected, blood-letting is dangerous; and yet in both theſe caſes we muſt ſometimes employ it. In idiopathic fevers, unaccompanied by any local affection, however, it is only the latter of the difficulties with which we have to ſtruggle. For wherever debility is actually preſent in ſuch fevers, blood-letting we ſhall find is decidedly improper.

In ſultry climates fevers run their courſe rapidly, ſo that a ſtrong full pulſe, and the other ſymptoms of ſynocha, ſhall, in two or three days, be ſucceeded by thoſe of extreme debility. This debility we know to be in a great degree the conſequence of the previous excitement; yet the only means we have of effectually relieving the latter are of all remedies the moſt debilitating.*

In all countries, if the epidemic tends to debility, we muſt be cautious in the employment of blood-letting, whatever be the degree of excitement at the beginning; particularly if the patient is, or has lately been, ſubjected to the action of other debilitating cauſes; It muſt be ſparingly uſed in hoſ-

* Mr. Clark, after relating the fatal terminations of three cases in which blood-letting was employed to moderate the violence of excitement at the commencement of the remittent of sultry climates, observes, that he has since found it necessary to lay aside blood-letting in such climates, both at sea and on shore, except in inflammations.

pitals, where patients are often expofed to a noxious atmofphere, and their ftrength has frequently been reduced by a fcanty diet. For fimilar reafons, it is more to be feared in large and populous cities, than in the country; and in fummer and autumn than in winter and fpring; fevers in the former feafons tending more to debility. "Æftate et "autumno," Burferius obferves, "fanguinis miffio in inter-"mittentibus minus convenit."

In all cafes it is to be remembered, that blood-letting is more or lefs pernicious according to the conftitution and habits of the patient. Thofe accuftomed to it, bear it better than others and require it more. The fame may be faid of people of a robuft habit, and in the vigour of youth.

A moderate blood-letting for an adult is ten or twelve ounces, but its extent of courfe muft vary according to circumftances.

It appears, then, from what has been faid,

i. That the fymptoms indicating blood-letting in agues are thofe of increafed excitement, and fuch as denote a difpofition to local inflammation; efpecially if they appear when the fever fhews a tendency to affume more of the continued form.

ii. That the period moft proper for this remedy, is the hot fit, efpecially during the firft paroxyfms of the difeafe.

iii. That the confequences moft to be dreaded from it are debility and its attendants; and

iv. That, on this account, it is moft to be feared where the body is at the fame time expofed to other debilitating caufes.

5. Wherever there is much debility, efpecially where thofe fymptoms appear which denote a great degree of debility in the natural functions, the paroxyfm is protracted and the

patient in danger of falling into typhus. I have already obſerved that theſe ſymptoms are ſeldom preſent to a conſiderable degree till the diſeaſe aſſumes, more or leſs, the nature of this fever. The treatment is then the ſame as in typhus, which we ſhall ſoon have occaſion to conſider at length.

All that we have to attend to in the ſweating ſtage is to avoid whatever might tend to check the ſweat; and to ſupport the ſtrength, if it is much reduced, by gentle cordials.

SECT. II.

Of the Treatment of an Intermittent during the Apyrexia.

THE treatment during the Apyrexia I have already had occaſion to obſerve, is the moſt important, and that which, ſtrictly ſpeaking, can alone be regarded as curative.

The indications are, to reſtore the patient's ſtrength, and to prevent the return of the paroxyſm.

1. *Of the Diet and Exerciſe during the remiſſion or Apyrexia.*

When the inflammatory diatheſis prevails, the diet muſt be ſuch as tends to counteract it. It ſhould conſiſt of milk and the farinaceous vegetables; and, unleſs the ſtrength is much reduced, fermented liquors ſhould be avoided.

When debility prevails, the diet ſhould be as full as the ſtomach will eaſily bear. It often happens in debilitated

ſtates, that the ſtronger kinds of animal food occaſion temporary fever. Beef, mutton, &c. ought therefore to be avoided; veal, lamb, and chicken, when the powers of digeſtion are not much weakened, will be found equally nouriſhing, and irritate leſs. The object is to chuſe that kind of food which affords moſt nouriſhment, with leaſt irritation. The ſame rule applies to liquids: When the ſtrength is much reduced, the patient's drink ſhould never be pure water, and in no caſe any mixture containing diſtilled ſpirits, except where fermented liquors, which have not been diſtilled, cannot be procured. Wine, particularly port wine, properly diluted, is the beſt; the quantity is eaſily regulated by attending to the conſtitution and habits of the patient, and the effects which the wine produces. Of the fermented liquors of this country, cider and porter are generally found the beſt. He ſhould eat frequently and ſlowly, and take care not to oppreſs the ſtomach by eating too much at one time.

While the digeſtive powers remain but little impaired, theſe are the only regulations neceſſary reſpecting the diet during the apyrexia. But it is not uncommon for a conſiderable degree of dyſpepſia to attend, and then a more particular attention to it is requiſite.

Aceſcent and oily articles of food, with a large proportion of liquid, compoſe the diet moſt difficult of digeſtion. The oppoſite to this, therefore, is that which agrees beſt with dyſpeptics. I have juſt had occaſion to obſerve, that the fleſh of old animals irritates more during digeſtion than that of young. By this, however, it is not meant that the latter is of more eaſy digeſtion. Juſt the contrary of this is found to be the caſe. The fleſh of old animals in general is moſt eaſy of digeſtion.* Nearly the

* There is an exception with respect to beef, which is more difficult of digestion than veal.

ſame may be ſaid of the food derived from the animal kingdom, compared with that compoſed of vegetables. The former is conſtanly found more irritating, more apt to induce fever; the latter more difficult to digeſt.

We muſt obſerve, therefore, the tendency to fever or dyſpepſia, and regulate the diet accordingly.

Where it is our view to obviate the ſymptoms of dyſpepſia, a diet compoſed pretty much of animal food and ſtale bread is the beſt. All kinds of ſoups, gravies, and freſh vegetables, ſhould be avoided, and every thing into the compoſition of which butter, or any other oily ſubſtance, enters. The ſame may be ſaid of all hard animal ſubſtances, ſalted and ſmoked meat, cheeſe, &c. The harder animal food is, it is the more difficult of digeſtion. This is not true of vegetable ſubſtances. Few things are more eaſy of digeſtion than a hard ſea-biſcuit, provided it be properly maſticated. The tough, thready, and membranous parts of vegetables are of moſt difficult digeſtion; next to theſe, the cold vegetables eaten raw, melons, cucumbers, &c. Every thing, which by maſtication forms a tenacious pulp, is of difficult digeſtion.

Wine properly diluted, particularly port wine, if its conſtipating tendency is obviated, is ſtill the beſt drink. Many have recommended diſtilled ſpirits and water as leſs aceſſant, but theſe in every form ſeem to apply a hurtful ſtimulus to the digeſtive organs. The ſame may be ſaid of taking the drink very warm; the temporary aſſiſtance it gives to the digeſtion is more than compenſated by its debilitating tendency. Cold drink acts as a tonic to the digeſtive organs; but I know many dyſpeptics who cannot take it without injury below a certain temperature, and have ſeen a fit of dyſpepſia induced by taking ice.

The rule of eating little and often is the more neceſſary, the more the ſtomach is weakened. However well choſen the food

may be, the dyſpeptic muſt be reſtricted with reſpect to quantity. This caution is the more neceſſary, becauſe the appetite in dyſpepſia is often morbidly increaſed.

The exerciſe both of mind and body, at this period, alſo demands particular attention.

The different kinds of bodily exerciſe may be arranged under three heads. That in which the body is moved by its own exertions, as in walking; that in which it is moved by other powers as in the various modes of geſtation; and that in which the circulation is promoted without moving the body, by friction, for example, or merely by preſſure.

Intermitting fever may induce ſuch a degree of weakneſs, that friction may be the only kind of exerciſe which the patient can endure without fatigue. This, however, is ſeldom the caſe when the intermiſſions are conſiderable; but wherever the ſtrength is much reduced, although a little of ſome rougher exerciſe may be borne, friction is always uſeful. It is the principal exerciſe among the higher ranks of ſome Aſiatic nations, and it was uſed both by the Greeks and Romans after they became luxurious.

As the total want of excerciſe is not more pernicious than that which occaſions fatigue, the different kinds of geſtation, even after the patient has recovered a conſiderable degree of ſtrength, are often found preferable to thoſe exerciſes, in which the body is moved by its own exertions.

The gentleſt kind of geſtation is ſailing, which is often ſerviceable in all caſes of debility, and particularly in debility of the ſtomach and bowels.*

* See Dr. Gilchrist's Treatise on the Use of Sea Voyages in Medicine.

Next to ſailing, the gentleſt exerciſe in common uſe is the motion of a carriage. But for the moſt part in ſuch climates as our own the patient muſt either be confined in a cloſe carriage, or run the riſk of taking cold. As a ſubſtitute for a carriage, but inferior to it, ſwings and ſpring chairs are uſed. None of theſe modes of exerciſe are equal to that on horſeback, when the patient is ſtrong enough not to be ſoon fatigued by it. It is particularly ſuited to thoſe caſes in which dyspepſia prevails.*

It is to be remembered, however, that any rough exerciſe, and particularly riding on horſeback, ſoon after meals, diſturbs digeſtion.

When walking can be borne for an hour or two without fatigue, it is the beſt exerciſe. It is that which nature intended. It is accompanied with a uniform and general exertion of the muſcles and from the valvular ſtructure of the veins is better fitted than any other to promote circulation. It is generally of ſervice to combine the different modes of exerciſe.

When the body is debilitated, the mind is often languid and liſtleſs. This ſtate of mind is more or leſs counteracted by a due degree of bodily exerciſe, but the occupation of the mind itſelf is the beſt means of cure.

The maxims by which the exerciſe of the body is regulated are alſo applicable to that of the mind. The great rule is to exerciſe without fatiguing it. Any ſtudy which fatigues is injurious, and a mind wholly unoccupied is no

* Of all kinds of exercise, Dr. Whytt (See his Treatise on Nervous Complaints) observes, riding on horseback has been justly esteemed the best. Sydenham is extravagant in his praise of this mode of exercise, and particularly recommends it in hypochondriacal and hysterical disorders. Riding, he observes, is preferable to walking, as it shakes the body more and fatigues it less.

leſs ſo. When the debility is conſiderable, the mind ſhould be occupied by amuſement alone; and even thoſe amuſements which greatly intereſt the feelings, or occaſion any conſiderable exertion of mind, may be hurtful. When, on the other hand, the patient has recovered a conſiderable degree of ſtrength, a moderate attention even to buſineſs is ſerviceable. However varied our occupations are, if they tend only to preſent gratification, they ſoon become inſipid. The mind muſt have ſomething in view, ſome plan of improving its condition, in order to arreſt the attention for any length of time. There is nothing of greater advantage than the converſation of friends, who conſtantly preſent to the patient the faireſt ſide of his future proſpects.

The time of day, at which either the mind or body is exerciſed, is alſo a matter of ſome importance. Towards the evening every kind of exertion becomes irkſome, and conſequently hurtful. In the debilitated, a degree of fever (probably the conſequence of the unavoidable irritations of the day) comes on at this time, which is only to be relieved by repoſe; going early to bed, therefore, is of much conſequence to them.

Expoſure to the night air often appears to be more pernicious than we can eaſily account for.

But although it is of conſequence for the debilitated to go early to bed, there are few things more hurtful than remaining in it too long. After the degree of ſtrength, of which the preſent ſtate of the ſyſtem is capable, is reſtored by ſleep, any longer continuance in bed tends only to relax. Getting up an hour or two earlier in the morning often gives a degree of vigour which nothing elſe can procure. I know people whoſe feet conſtantly become cold and damp if they remain in bed a few hours longer than uſual in the morning. For thoſe who are not much debilitated and ſleep pretty well,

the beſt rule is to get out of bed as ſoon as they awake in the morning. This at firſt perhaps may be too early, for debilitated habits require more ſleep than thoſe in health; but riſing early will gradually prolong the ſleep on the ſucceeding night, till the quantity which the patient enjoys is equal to his demand for it.

Lying late is not only hurtful by the relaxation it occaſions, but alſo by occupying that time of the day, at which exerciſe is moſt beneficial.

In every circumſtance reſpecting diet and exerciſe, much attention muſt conſtantly be paid to the patient's age, habits, and inclinations.

In old age, repoſe is more neceſſary, and exertions of every kind are leſs beneficial, and more apt to be hurtful.

Old people are leſs ſubject to that diatheſis which diſpoſes to inflammation, than the young; in them debility is moſt to be feared, and is removed with moſt difficulty. We ſeldom find occaſion, therefore, to recommend a low diet to them.

No general rule, however, can be laid down; in old people we ſometimes meet with the inflammatory diatheſis, which muſt be treated in the manner juſt pointed out, but with the more caution the older the patient is.

In both old and young the inflammatory diatheſis is moſt frequent in an early ſtage of the diſeaſe; the repetition of the paroxyſm tends to overcome it and to produce debility; a poor diet, therefore, is ſeldom proper in protracted caſes.

When the remiſſions are but imperfect, the patient has little or no deſire for food or exerciſe, and nothing can be more hurtful than to force him to take either. An inclination to ſleep, during the intermiſſion, eſpeceilly if it is ſhort, ſhould be encouraged. On the other hand, when he has an inclination to eat or walk about, we are not to inſiſt on his

keeping his bed, or abſtaining from food. The neceſſity for ſleep or food is beſt determined by his own feelings. Longings for particular articles of food, if not improper, ſhould be indulged; the irritation they occaſion, when not gratified, does harm.

In regulating the diet, during the intermiſſion, ſome attention ſhould be paid to the ſeaſon of the year. In ſpring, I have already had occaſion to obſerve, the inflammatory tendency prevails more frequently than in autumn. In the latter ſeaſon, eſpecially at its commencement, we dread debility; fevers are then moſt apt to become malignant. The warmer and moiſter the ſeaſon is, this is the more to be feared. The inflammatory tendency prevails moſt when the weather is cold and changeable.

We muſt attend alſo to the nature of the prevailing epidemic. When it is accompanied with inflammatory ſymptoms, we muſt be cautious in the uſe of animal food and fermented liquors; when accompanied with ſymptoms of debility, every thing that weakens is to be avoided, and as full a diet adviſed as the ſtate of the patient admits of.

2. *Of the Medicines employed during the Remiſſion or Apyrexia.*

Theſe may be divided into two claſſes: thoſe exhibited during the whole, or a great part of the apyrexia; and thoſe which are only employed about the time the paroxyſm is expected.

Of all the medicines, recommended in intermittents, none

has been ſo generally employed as the Peruvian bark.* On it indeed moſt Phyſicians wholly depend in theſe fevers.

A remarkable cure performed by it on the counteſs del Cinchon, the Spaniſh viceroy's lady, in the year 1640, firſt drew the attention of Europeans to it. It is ſaid, that the Indians were not ignorant of its virtues as early as the year 1500. In 1649, a jeſuit brought a conſiderable quantity of it into Italy, which was diſtributed by the fathers of that order at a high price over a great part of Europe, from which circumſtance it got the name of jeſuit's bark; and, about the ſame time, the Cardinal de Lugo imported a quantity of it for the uſe of the poor at Rome. "When firſt introduced " (Dr. Cullen† obſerves) it was found to cure intermittents " very readily; but whether it was that a medicine of more " ſeeming efficacy was at the ſame time brought into Europe, " or whether timid practice leſſened the doſe, it went out of " credit, and was not till 30 years afterwards reſtored by " Talbot."

The bark is an aſtringent bitter, with ſome degree of aromatic flavour; to none of theſe qualities, however, can its powers be attributed, ſince no combination of aſtringents, bitters, and aromatics, is found equally effectual.

A variety of prejudices reſpecting it prevailed for a long time after its introduction into Europe, and prevented its general employment. The more ancient of theſe do not even deſerve to be mentioned, that thoſe who uſe this medicine die within a year, or according to others within ſeven

* This medicine is mentioned by authors under a variety of appellations, chincona, chinachina, chinchina, kina kina, kinkina, quina quina, quinquina, pulvis commitissæ, gentiana indica, antiquartium Peruvianum, jesuiticus pulvis, Cardinal de Lugo's powder, &c.

† Dr. Cullen's Materia Medica.

years, that it is particularly pernicious to fat people, &c. The more rational prejudices againſt it aroſe chiefly from the nature of the fevers in which it is recommended.*

* Dr. Millar (Account of the Diseases most prevalent in Britain) declares it his opinion, contrary to what he once thought, that the fever, and not the bark, is the cause of the obstructions and dropsies which frequently supervene on agues, and that the bark is the best means of preventing these affections. Dr. Jackson (Account of the Diseases of Jamaica) remarks, that he always found dysentery, dropsy, and visceral obstructions, most common where the bark was most sparingly employed. When the ague, Dr. Lind observes, was stopped by the bark immediately after the first or second fit, as in my own case and that of 200 of my patients, neither a jaundice nor dropsy ensued; whereas when the bark could not be administered on account of the imperfect remissions of the fever, or when the patient had neglected to take it, either a dropsy, jaundice, or a constant head-ache were the certain consequences, and the degree of violence was proportioned to the number of the preceding fits, or to the continuance of the fever.

The bark, indeed, is by many ranked among the best means of removing such affections, when they are the consequences of agues. Dr. Brocklesby (On the Diseases of the Army) recommends it in cases of visceral obstruction after the use of mild and repeated emetics and cathartics; and Dr. Strack (De Febribus Intermittentibus) remarks, that he has found the bark more powerful than any other medicine in removing indurations of the spleen, and has observed it suceessful in the dropsical affections which supervene on intermittents.

It was a prevalent opinion in many places, that agues cured by the bark more frequently return than those which leave the patient after running their full course. This also is now regarded as a groundless prejudice (Torti's Therapeuticæ specialis). In short, amidst all the prejudices entertained against it, wherever it has been fairly tried in agues it has proved both safe and successful.

Although moſt practitioners at preſent employ the bark in agues, at least when they are protracted beyond a few paroxyſms, there is ſome difference of opinion concerning the period of the diſeaſe at which it ought to be exhibited, the preparation of the patient, &c.

We determine when and how the bark is to be given by attending to the following circumſtances:

1. The period of the diſeaſe.
2. The nature of the ſymptoms, particularly the preſence of the inflammatory diatheſis, or debility.
3. The climate, and ſeaſon of the year.
4. The age and habit of the patient; and
5. The nature of the epidemic.

1. There has been ſome diſpute reſpecting the beſt time of the apyrexia * for the exhibition of the bark. Many give it immediately after the paroxyſm, and at intervals till the fever returns; others only during a few hours before the paroxyſm. The queſtion may be determined by attending to the duration of the apyrexia, the quantity of bark required, and the quantity which the ſtomach is capable of receiving in one doſe.†

* While the intermitting form remains distinctly marked, it is universally admitted that the exhibition of the bark during the cold or hot fits is improper. Dr. Fordyce made a trial of the bark during the hot fit, and found that it both increased the length of the paroxysm, and rendered the crisis less perfect. Dr. Cleghorn also remarks, that when the bark was given during the paroxysm, the patient died; but he recovered often after his case seemed desperate, if the remissions were seized for the exhibition of this medicine.

† While the prejudices against the bark were prevalent, it was generally exhibited in the former of these ways, in all cases,

When the apyrexia is short, and the quantity of bark required conſiderable, it muſt be given immediately after the paroxyſm and continued till the return of the next at longer or ſhorter intervals, according as the caſe is more or leſs urgent, and the ſtomach able to bear it. On the other hand, when the apyrexia is long, and eſpecially when a great quantity of the bark is not neceſſary, its exhibition ſhould be delayed till within ſix or eight hours of the time at which the the paroxyſm is expected. For a conſiderable quantity given at this period is more likely to ſucceed, than the ſame quantity given in ſmaller doſes, throughout a long apyrexia.

It appears probable from many obſervations that in the cure of intermittents this medicine acts chiefly by its effects on the ſtomach and inteſtines, and conſequently that our endeavours should be directed to have a conſiderable quantity of it in the primæ viæ, at the time the paroxyſm is expected.

Many have attempted to determine the quantity of bark which will with certainty remove an intermittent ;* this, how-

The doses were small, and the intervals at which they were given long. Sydenham disapproved of giving the bark in large doses, and generally endeavoured to seize long intervals for its exhibition. He recommends mixing an ounce of bark with syrup of roses, and giving the patient the size of a nutmeg morning and evening, on the days of intermission, until the whole quantity is finished. The same quantity was repeated in 14 days, which was given a third time in the same manner. While such was the mode of prescribing the bark, we cannot be surprised that it was not found very successful.

* Dr. Millar observes, that he cannot recollect a case of remitting fever, in several years extensive practice, in which the patient died after taking two ounces of bark. And Mr. Reid, in his Account of the Diseases of the West Indies, makes the same observation.

ever, depends on various circumſtances which will be pointed out as we proceed. It may be remarked upon the whole that tertians require more bark than quotidians; and quartans, than tertians.

When the pulſe is ſtrong and full, and ſtill more when it is hard, when the face is fluſhed, and the heat conſiderable, eſpecially when theſe ſymptoms are accompanied with rheumatic or pleuritic pains, or difficulty of breathing, even although the apyrexia be complete and long, the bark muſt not be exhibited, till the recurrence of ſuch ſymptoms is prevented by the means already pointed out in the treatment of the paroxyſm.*

* What is here said is well illustrated by Sir John Pringle's Account of the Intermittents prevalent among the British troops on the Continent, which were of an inflammatory nature. He generally found it necessary to begin with opening a vein, and to repeat the blood-letting according to the urgency of the symptoms. Most of the remittents which came under his care, either in spring or towards the end of autumn, were accompanied with pleuritic or rheumatic pains; and the use of the bark often changed them into continued inflammatory fevers. It may be observed, in confirmation of what was said of the proper period for blood-letting in these fevers, that he particularly recommends the hot fit for this purpose. He generally gave a cathartic immediately after the blood-letting. There are few authors who treat of intermittents, who have not had occasion to make observations similar to those of Sir John Pringle.—Dr. Donald Munro, in particular, gives nearly the same account of the remittents which prevailed among the soldiers on the Continent.—When the bark had failed on several trials, Dr. Rush observes, one or two moderate blood-lettings generally secured its success; in these cases, he adds, the pulse is full and a little hard, and the blood sizy. The bark is always unsuccessful, he justly remarks, when blood-letting is necessary, and he says he has known many instances in which pounds of this medicine had been given without effect,

It is chiefly at the commencement of the diſeaſe that the inflammatory diatheſis prevails, and when this is corrected, mild, eſpecially vernal intermittents, often yield ſpontaneouſly.* The continuance of diſeaſe tends to overcome

which yielded readily after ten or twelve ounces of blood were taken away. Dr. Rush thinks that blisters often serve the purpose of blood-letting in these cases; but they are not to be depended upon. How different a mode of treatment is to be pursued, when our practice in agues is not incumbered by the presence of the inflammatory diathesis, will appear from comparing what is said by these authors, with what Dr. Jackson says of the fevers which prevailed among the troops in America. In the autumnal months, when signs of malignity and danger were present, he generally seized the first intermission for exhibiting the bark, without premising either vomitting or purging, even where the bowels were loaded. He gave two drams for a dose, and repeated it every two hours, while the fever was absent. Two ounces, he observes, taken in the space of eight or ten hours, were often more effectual than double the quantity in small doses and at long intervals.

* Dr. Cleghorn seldom gave the bark in tertians till the fifth day. From the paroxysm which took place on that day, he judged whether or not the bark was necessary, and in what quantity it ought to be given. If this paroxysm, namely the third, was not longer and attended with worse symptoms than the second, if the patient preserved his strength, and if a lateritious sediment appeared in the urine, he often ventured to trust the cure to nature. As he judged from this paroxysm of the future treatment of the disease, he was careful to premise such medicines as tended to moderate it, and prepare the body for immediately receiving the bark, in case the symptoms of the third paroxysm proved it to be necessary. During the first three or four days, therefore, he ordered evacuations. It was his custom to take away a little blood at the commencement of the disease, if the state of the patient admitted of it; and he never failed to clear the primæ viæ of any irritating matter which

this diatheſis; thus we conſtantly find, as was obſerved on a former occaſion, that however well marked it is at the commencement of intermitting fever, it always diſappears in its progreſs. On this account practitioners have found, that many intermittents yield to the bark with more eaſe, after they have run through ſeveral paroxyſms, than at their commencement.*

they happened to contain, at this period; and to these means alone the complaint sometimes yielded. But if the third paroxysm was the longest and most severe that had happened, if it was attended with any dangerous symptoms, if the sick became giddy, feeble, or languid, without delay he had recourse to the bark. As soon as the sweat ceased to flow, he ordered two scruples or a dram of it to be given every two or three hours, or every hour and half, so that five or six drams might be taken before next day at noon. It is necessary, he remarks, that a considerable quantity of the bark be given at this period; since after it, the fits are often redoubled, so that we have not a proper opportunity of giving the medicine. It is to be remembered, however, that Dr. Cleghorn practised in the mild climate of Minorca. In general we shall find that the exhibition of the bark should not be delayed so long as he recommends, particularly in autumnal agues.

* When the patient was athletic, Dr. Brocklesby observes, he allowed the fever to run on for a little, before he gave the bark. Giving the bark too early, he remarks, in athletic habits, produced much pain of the head, yellowness of the eyes, and sometimes continued fever.—Hillary also observes, that he has frequently seen the early use of the bark render the fever continued, and of a bad kind. See Brocklesby on the Diseases of the Army, and Hillary's Account of the Diseases of Barbadoes.

In those cases, where the tendency to inflammatory symptoms prevents us giving much of the bark, Dr. Brocklesby recommends giving small doses of it with myrrh, snakeroot, or some other such medicine, till the inflammatory diathesis is sufficiently removed to admit of giving it in larger doses.

Many, from this circumſtance, have been led to lay it down as a general rule, that the bark is not to be given at the commencement of agues; and this rule they found the more uſeful, as it was often neceſsary to clear the primæ viæ before its exhibition. Such appear to be the ſources of the prejudice againſt giving the bark at the commencement of intermittents; for a prejudice it certainly is, when made a general rule. If confined to thoſe caſes in which the inflammatory diatheſis prevails, it is the reſult of univerſal experience.

It would appear, however, that we are not, in ſuch caſes, as Dr. Brocklesby and others recommend, to defer the bark till the continuance of the diſeaſe has overcome this diatheſis; but till it is corrected by the proper uſe of the means above pointed out. There is nothing in the nature of intermittents, except their being frequently attended by the inflammatory diatheſis, which prevents the uſe of the bark, after the firſt paroxyſm.

When the pulſe is feeble and quick, and the ſtrength greatly reduced, the early exhibition of the bark is indiſpenſable.*

While the inflammatory diatheſis is preſent, the bark proves the more hurtful, the more the fever ſhows a tendency to become continued. The uſe of the bark in theſe circumſtances indeed often renders it ſo.

* Dr. Brocklesby observes, that when the patient was weak and irritable, he gave the bark immediately, and then did not even wait for the previous exhibition of emetics and cathartics, whatever the state of the bowels might be. This part of Dr. Brocklesby's observations is well illustrated by those of Mr. Clark on the Diseases in long Voyages to hot Climates, which in a striking manner point out the propriety of having immediate recourse to the bark wherever there is much debility; and particularly if the symptoms peculiar to typhus make their appearance. "If the "remissions are distinct, (he observes) the bark will have a more

The contrary of this obſervation is true of the caſes in which debility prevails; in theſe, provided the remiſſions are ſtill diſtinctly marked, the greater tendency the fever ſhows to become continued, the greater quantity of bark is required; and when the debility is very great and the remiſſions ſhort, it may be given through the whole paroxyſm.* The more the patient is capable of receiving, the greater tendency the fever ſhews to reſume the intermitting form.

Theſe obſervations, have been frequently overlooked, and much confuſion has ariſen from writers attempting to lay down, as generally applicable to the treatment of agues, the maxims of practice, which they found ſuited to the particular caſes which fell under their own obſervation.

In the exhibition of the bark, more attention has been

"speedy effect; but even although the disease," (which was always attended with symptoms of debility) "is continued, by its "use, it is effectually prevented from growing dangerous and "malignant." When the patient was too weak to receive the bark in powder, he had recourse to the decoction, and when even this could not be retained alone, he gave along with it a large dose of solid opium; for the patient's life seemed to depend on its exhibition. In such cases he found much benefit from giving wine along with the bark. This is not only serviceable by supporting the strength, but also by rendering the bark more effectual; for in very debilitated states of the system much larger quantities of the bark are required, to prevent the return of the fever.

* The bark (says Raymond) should be given during the paroxysm, with much acid, particularly the vitriolic acid, when the patient has the facies hyprocratica, when he is subject to syncope or coma, when his pulse intermits, and his breathing is stertorous, and then, he adds, it is the best of all remedies, and often rescues the patient from the very jaws of death. See Raymond's paper on the Intermittents of Mittlinburgh, in Baldinger's Sylloge Opusculorum.

paid than ſeems neceſſary, to the ſtate of the ſtomach and bowels. It is a very prevalent opinion, that while the ſtomach and bowels are loaded, whatever be the ſtate of the ſymptoms, the bark ought not to be exhibited. Intermittents, Dr. Mead * obſerves, are not ſafely cured by the bark until the primæ viæ have been cleared, and moſt writers on the ſubject make ſimilar obſervations.

When the ſymptoms are not urgent, and eſpecially when the inflammatory diatheſis prevails, if there is reaſon to ſuſpect the preſence of irritating matter in the ſtomach and bowels, it is proper to delay the uſe of the bark till after the operation of an emetic and cathartic.

But in urgent caſes, and where there is no inflammatory diatheſis we have reason to believe that the exhibition of the bark ought not to be delayed whatever be the ſtate of the ſtomach and bowels; for it even appears from many obſervations that actual vomiting and purging ſhould not induce us to delay the exhibitiou of the bark, when the ſtate of the fever greatly demands it. "I may remark," ſays Dr. Jackſon, "that "the bark was often rejected by the ſtomach, and in ſome caſes "paſt off almoſt inſtantly by ſtool, yet the courſe of the fe-"ver ſeemed to be no leſs effectually checked by it than "when ſuch effects did not occur."—"In violent caſes, Dr. "Donald Munro † obſerves, "where it was neceſſary to give "the bark before emetics and cathartics could be exhibi-"ted, I often gave it along with a cathartic, and found that "keeping up a catharſis, did not prevent the bark curing the "ague." From theſe and ſimilar obſervations it appears, that the remark of Dr. Millar ‡ and others, that the exhibition of

* Monita et Præcepta Medica.

† Dr. Monro's Account of the Diseases of the Army.

‡ Dr. Millar's Work on the Diseases most prevalent in Great Britain.

the bark can be of no ſervice while a diarrhœa continues, is unfounded; or at leaſt not to be admitted in its full extent.

From the ſame obſervations alſo, we muſt infer that the common practice of giving large doſes of opium, and other medicines, to allay ſpontaneous vomiting and purging, in order to exhibit the bark early in urgent caſes, is often improper; ſince the continuance of theſe will not prevent its ſalutary effects, if it can be made to lie on the ſtomach only for a ſhort time, and the doſe be conſtantly repeated; and by checking them we lay up a fruitful ſource of irritation, which never fails to increaſe the fever.

In leſs urgent caſes, where the immediate exhibition of the bark is not neceſſary, if ſpontaneous vomiting and purging occur, the proper treatment is to promote theſe evacuations by diluents, till the primæ viæ are ſufficiently cleared; and then to allay the commotion excited by opiates, before we order the bark.

3. The climate and ſeaſon of the year influence our practice in the uſe of the bark. As in ſultry climates the changes in fevers are frequently very ſudden; evacuations, though apparently neceſſary at their commencement, often prove fatal by increaſing the ſubſequent debility. In theſe climates, therefore, when the ſymptoms are not very urgent, but a full pulſe and other ſigns of the inflammatory diatheſis, appear, inſtead of preparing the patient for the bark by blood-letting,*

* Dr. Lind, in his account of the Remitting Fever of Bengal, relates a remarkable instance of the bad effects of blood-letting in tropical climates, even when employed with caution. A patient of his, convinced that it would relieve him, insisted on being bled. Dr. Lind in vain dissuaded him from it. Although only five or six ounces were taken from him, he immediately lost his strength,

it is often ſafer to defer the febrifuge till a few paroxyſms of the fever have removed this diatheſis, and at moſt to promote this effect by cooling laxatives, and diluent clyſters.*

In this, as in many other inſtances, much depends on the diſcernment of the practitioner, even after he is made acquainted with every circumſtance which ought to influence his judgment. When the inflammatory ſymptoms run ſo high as to bring the life of the patient into immediate danger, we muſt in every part of the world have recourſe to blood-letting. And we are alſo to remember that the continuance of violent excitement, even where life is not in immediate danger, is itſelf a highly debilitating cauſe, and will often debilitate more than a well timed blood-letting, which relieves it.†

In cold climates, fevers of all kinds, and particularly agues, are more generally accompanied with inflammatory ſymptoms; evacuations previous to the uſe of the bark, therefore, are more neceſſary, and fortunately are not attended with the ſame danger.

Even the ſeaſon of the year in the ſame climate influences the exhibition of the bark. In ſpring, from the greater

and in less than an hour was carried off by the next fit. Mr. Badnock and the surgeon of the Ponsborne, he observes, bled each of them two patients; each lost one.

* It is on account of the tendency to debility in the fevers of sultry climates, that we find authors insisting particularly on the necessity of having recourse to the bark in these fevers at an early period. I have already quoted the observations of Dr. Jackson. The early use of the bark, Dr. Brocklesby observes, is particularly necessary in the fevers of the West Indies, especially in those which appear in the rainy season. It was observed above, that it is during the rainy season of sultry climates that the most dangerous fevers prevail.

† Dr. Lind's Treatise just refered to.

prevalence of inflammatory ſymptoms, evacuations are both more neceſſary and ſafer than in autumn, in which debilitating cauſes are apt to change agues to the continued form.

4. In the young and plethoric, the pulſe is often full; and evacuations, previous to giving the bark, neceſſary. In the old and thoſe reduced by low diet, previous diſeaſe, or any other cauſe, it is ſeldom proper unleſs there be a tendency to local inflammation, to prepare the patient for the bark in any other way, than by a gentle emetic and cathartic when the ſtomach and bowels are loaded. In theſe caſes the bark ſhould be given in conſiderable quantity during the firſt or ſecond remiſſion, becauſe in debilitated habits the continuance of the fever is not only moſt to be dreaded, but a greater quantity of bark is required to ſtop it. It is to the laſt circumſtance, together with the power of habit, that we are to attribute the obſtinacy of protracted caſes.

5. The nature of the prevailing epidemic is conſtantly to be kept in view. When it is frequently attended with local inflammation, or when the inflammatory ſymptoms of the fever itſelf run high, the bark muſt be uſed with caution; and never till after proper evacuations. When, inſtead of theſe ſymptoms, there is a tendency to debility and conſequently to typhus, it muſt be given early, and in large quantity, and evacuations cautiouſly adviſed.

The bark may be uſed in extract, tincture, infuſion, or decoction; but it is now generally admitted that when the ſtomach can bear it, the ſimple powder is the beſt preparation, It never ſucceeds ſo well as when given in ſubſtance.

When we cannot perſuade the patient to take the bark by the mouth, or it will not remain on the ſtomach, it may

be injected per anum. This, however, is a much less efficacious way of giving it.

The external use of the bark has also been recommended, and is sometimes serviceable. It is not, however, to be depended on. It is only in children, who require a smaller dose, that we can expect much advantage from it. The best mode of applying it is to sew the powder into that part of the clothes, which is wrapt about the body. It is sometimes made into poultices, and applied to the stomach and wrists, or the decoction is used as a bath for children.*

In some cases it is proper to give other medicines along with the bark. When the strength is much reduced, the powder may be given in wine, and more or less of the wine taken as the state of the patient requires between the doses of the bark. When the stomach is very irritable, a dose of solid opium, or opium and camphire, given with it, often enables the stomach to retain it. Nothing is of more service in preventing the nausea and oppression which frequently attend the use of the bark, than a few drops of the vitriolic acid; when the thirst is urgent, crystals of tartar and vegetable acids may be given with it.†

In soldiers, sailors, and others, who have been accustomed to the use of distilled spirits, brandy and water is often the most convenient vehicle. Porter was recommended by Morton, and by Dr. Lind in the fever of Bengal. Lime water is particularly recommended by Mr. Skeete, and muriate of ammonia by Dr. Brocklesby, as increasing the virtues of the bark. The former thinks that rubbing the powder with calcined magnesia previous to preparing the infusion has the same effect.

* For the external use of the bark see the 2d vol. of the London Medical Observations.

† Dr. Lind on the Remittent of Bengal.

When the ſtomach is habitually weak, aromatics, bitters, or aſtringents joined with the bark are often beneficial; they are recommended by Drs. Mead, Brockleſby, Lyſons, and others.

When it occaſions purging, we muſt have recourſe to opiates and aſtringents; of the latter, the gum kino and extract of logwood are among the beſt. If there is reaſon to ſuſpect that the purging proceeds from acidity, which is ſometimes occaſioned by the bark deranging the digeſtive powers, an anacid muſt be combined with it. If on the other hand it occaſions coſtiveneſs, it is neceſſary to give gentle apperients with it; for this purpoſe rhubarb is particularly recommended by Dr. Mead; it has the double advantage of moving the body and tending to reſtore tone to the ſtomach and bowels.

Milk and liquorice are the beſt means of covering the taſte of the bark.*

There are three kinds of bark in uſe in this country, the red, the pale, and the yellow. The genuine red bark is more bitter and aſtringent to the taſte than the pale, and ſhows a greater degree of aſtringency with chalybeate ſolutions. It likewiſe contains more reſin. But the proportion of the reſin differs in different parcels. Rubbing the pale bark with calcined magneſia before it is infuſed, is ſaid to increaſe the deepneſs of the colour, the aſtringency, bitterneſs, and antiſeptic power of the infuſion. Calcined magneſia, produces none of theſe effects on the red bark.† There can be little doubt that the genuine red bark is more powerful in the cure of agues than the pale, as appears from the obſervations of Saunders‡ and Rigby § on this bark, and Skeete's treatiſe on the

* The Materia Medica of Dr. Lewis.

† Skeete's Treatise on the Bark.

‡ Saunders on the Red Peruvian Bark.

§ Rigby on the Red Peruvian Bark.

red and pale bark. Dr. John Hunter * ſays, he often found the red bark more effectual than the pale, but thought it more apt to affect the bowels.

Whatever be the efficacy of the genuine red bark, it is very doubtful whether that now ſold be at all ſuperior to the pale. It is ſaid to owe its deeper colour to being dyed. A quantity of the genuine red bark was firſt brought to England in a Spaniſh prize, captured in 1781, and it is very doubtful if any more of it ever came to this country.

Phyſicians ſeem to agree that the yellow bark is the moſt powerful we now poſſeſs. It was hardly known in England before the year 1793. Dr. Ralph, phyſician to Guy's Hoſpital, has publiſhed ſome obſervations on it.

I have treated of the bark at conſiderable length, becauſe in moſt places the cure of agues is now almoſt entirely truſted to this medicine; and where it has met with a fair trial, it has been attended with a degree of ſucceſs which ſufficiently juſtifies the general partiality in its favour. Sometimes, however, it is ineffectual; in ſome places it cannot be eaſily procured; in others its high price often prevents the poorer ranks from uſing it in ſufficient qnantity; it is therefore neceſſary to be acquainted with the other medicines which may be uſed with the greateſt probability of ſucceſs.

I ſhall in the firſt place make ſome obſervations on the other barks which have been employed in agues.

The Anguſtura bark was firſt imported from the Weſt Indies in 1788. It has been found ſucceſsful, though inferior to the Peruvian bark in the cure of agues. We are not acquainted with the tree which produces it, its place of growth, &c. Reſpecting theſe points Mr. Brand, in a treatiſe on it,

* See his Account of the Diseases of the West Indies.

the ſecond edition of which appeared in 1793, makes ſome conjectures. The Anguſtura bark is given in ſmaller doſes than the Peruvian bark. It is leſs apt to diſorder the bowels, and has ſometimes succeeded in agues where both the red and pale bark had failed. It is to be obſerved that an intermittent's yielding now and then to a ſecond remedy, after the firſt has failed, is no proof of the ſecond being upon the whole preferable. There are many inſtances of ſimple bitters having ſucceeded in the cure of agues, after the bark had failed. The change, although to a medicine upon the whole leſs efficacious, ſeems often beneficial. The reader will find an account of the Anguſtura bark in the treatiſe juſt mentioned, and in ſeveral papers referred to in it.

The cinchona Jamaicenſis, diſcovered by Dr. William Wright, has alſo been uſed with ſucceſs in intermittents; it ſeems inferior, however, to the bark laſt mentioned. The reader will find Dr. Wright's account of it in the Philoſophical Tranſactions for the year 1772. There are alſo ſome obſervations on it in Dr. Skeete's Treatiſe on the quilled and red Peruvian bark.

The St. Lucia bark or cinchona Caribbæa has alſo been found ſucceſsful in theſe fevers. Dr. Kentiſh has publiſhed an account of ſome experiments made with it, and Mr. Wilſon, of St. Lucia, wrote a paper on it, which appeared in the Philoſophical Tranſactions. Dr. Skeete thinks it probable, that a ſimilar bark is produced in all the Weſt India Iſlands. This is perhaps ſuperior to the cinchona Jamaicenſis.

The bark of the mahogany tree, Dr. Wright informed me, has often been uſed with ſucceſs in intermittents. But from the trials he has made he conſiders it as much inferior to the Peruvian bark. It is ſo like the latter that it has been fraudulently mixed with it, or even ſold for it unmixed.

The Tellicherry bark, or as it is called in the Eaſt Indies, the corte de Pala, has alſo been found ſucceſsful.

The bark termed Swietenia febrifuga, an account of which the reader will find in a theſis, publiſhed at Edinburgh in 1794, by Dr. Andrew Duncan, jun. has been employed in agues. This bark was diſcovered and ſent from the Eaſt Indies by Dr. Roxburgh. Dr. Duncan terms it Swietenia soymida. Soymida from the Indian name of the tree from which it is procured. It often ſucceeds; but from the trials made with it, both at Edinburgh and in other places, its virtues ſeem to be conſiderably inferior to thoſe of the Peruvian bark.

The broad-leaved willow bark is alſo occaſionally ſucceſsful, though inferior to moſt of the preceding.

Such are the principal barks which have been recommended in intermittents. A great variety of other articles have occaſionally been employed.

The lignum quaſſiæ is much praiſed by Linnæus and Aurivillius. It has not, however, come into general use; we now know it, contrary to the opinion of theſe authors, to be much inferior to the bark.

The faba ſancti Ignatii has been uſed by Dr. Lind and others with ſucceſs. Bitters in general indeed have been found a more or leſs ſucceſsful ſubſtitute for the bark in intermittents. Thoſe juſt mentioned, wormwood, carduus benedictus, cammomile flowers, gentian, Virginian ſnakeroot, the leſſer centaury, and the bitter orange peel, are among the chief of this claſs of medicines.

A variety of aſtringents have alſo been employed; oak bark and galls, alum, the various preparations of iron, &c. Aſtringents in general are inferior to bitters in theſe fevers. The combinations of aſtringents and bitters ſeem to be more powerful than either ſingly.

Aromatics alſo have been recommended; camphire, muſk, myrrh, &c. The reader may conſult a paper by Mr. Collins, in the 2d volume of the Medical Communications, for the uſe of the capſicum in agues.

Various metallic preparations have been employed. There are ſome obſervations on the uſe of the calx and ſulphate of zink, particularly of the former, in the cure of agues by Dr. Blane, in his work on the diſeaſes incident to ſeamen. Mercury in various forms has alſo ſometimes been ſucceſsful. The reader will find inſtances of agues cured by mercury in the 6th volume of the Edinburgh Medical Eſſays and Obſervations. In one inſtance, related by Dr. Donald Monro in the 2d volume of the Medical Tranſactions, this fever yielded to no remedy that could be thought of, till after a courſe of mercury, which had no apparent effect but that of reducing the patient's ſtrength. It then yielded readily to the bark. Hoffman and Willis* have alſo recommended mercury in intermitting fevers. Its powers, however, in theſe fevers are but inconſiderable. Van Swieten † ſays, he has ſeen a quartan laſt through the whole of a very complete mercurial ſalivation! and De Meza ‡ even alledges, that mercury ſometimes increaſes the malignity of intermittents.

A metallic oxyd, of greater activity than any of the medicines which have been mentioned, has lately been much employed. The medicine called Ague Drops, it is ſaid, owes its efficacy to arſenic.

* See Willis, Opera Omnia, published at Geneva in 1782.

† See his Comment. in Aph. Boerhaavii.

‡ See the first vol. of the Acta Societat. Med. Havniensis.

See also a paper by Schulze and Grævius on the use of Mercury in Quartans, in the 5th vol. of Haller's Disput. ad Morb. Hist. et Cur. Pertin.

The uſe of this mineral in agues, however, has not been confined to the practice of empirics. Many practitioners of the firſt reſpectability employ it; and it is certain, that agues, which have reſiſted the moſt aſſiduous uſe of the bark and other medicines, have yielded to arſenic, as I have myſelf repeatedly witneſſed. I have already had occaſion to obſerve, that an intermittent's yielding to a ſecond remedy after the firſt had failed, is no proof that the ſecond is upon the whole preferable. From many obſervations, however, we have reaſon to believe arſenic the moſt effectual of all the medicines which have been uſed in theſe fevers. In the medical reports of the uſe of arſenic in the cure of remitting fevers and periodic headachs, by Dr. Fowler of Stafford, we have ample proof of its ſucceſs, and, as far as his experience goes, of its ſafety.*

In the 19th volume of Dr. Duncan's Medical Commentaries there are a few additional obſervations on this ſubject, by the ſame author; and in ſome letters ſubjoined to Dr, Fowler's Treatiſe it has the ſanction of many respectable practitioners. We cannot, however, I think, regard its ſafety as aſcertained. It would require a very extenſive experience to determine the propriety of having recourſe to it, before ſafer means have failed. Its uſe, at leaſt the throwing any conſiderable quantity into the ſyſtem, even in ſmall doſes, muſt for a long time be a doubtful practice. It is well known that

* The following is his mode of giving it :—64 grains of white arsenic reduced to a very fine powder, and mixed with as much vegetable alkali, is added to half a pound of distilled water, and gently boiled in a Florence flask, in a sand heat, till the arsenic is completely dissolved; half a pound of compound spirit of lavender is then added to it, and as much more distilled water as makes the whole solution amount to a pound. The dose of this is from two to twelve drops once, twice, or oftener in the day, according to the age, strength, &c. of the patient.

lead and mercury often remain in the body for ſome time, without producing their effects, which, when they do appear, are proportioned, not to the quantity taken in any one doſe, but to that which has been taken upon the whole.

The bad effects which ſmall doſes are apt to produce, even when given with caution, are, diſorders of the ſtomach and bowels, ſwellings of the face, or other parts of the body, an increaſed or diminiſhed flow of urine, ſlight eruptions, headach, ſweating, and tremors. Theſe effects may generally be removed by gentle laxatives and emetics, or merely by diſcontinuing the uſe of the arſenic. Combining with it ſmall doſes of opium has been found in ſome meaſure to obviate them.

Other medicines have been employed, chiefly by the vulgar, and have occaſionally ſucceeded; ſuch as bay leaves dried and powdered, in the quantity of a dram, three times a day; half a dram of the inner bark of the aſh, or half an ounce of ſulphur in a glaſs of ſtrong beer, taken occaſionally, &c. Some of theſe ſeem to operate chiefly, if not wholly, by their effect on the mind, ſuch as camphire and ſaffron hung in a bag at the pit of the ſtomach, cobwebs mixed with crumbs of bread taken in pills, &c. It is a practice among the vulgar in ſome places for the cure of agues to take half a pint of their own urine three mornings ſucceſſively, which is ſaid to be a very effectual remedy. Any thing capable of making a ſtrong impreſſion on the mind, whether by exciting horror, ſuperſtitious dread, or confidence, occaſionally ſucceeds.

The means recommended when the paroxyſm is expected, form the laſt diviſion of thoſe employed during the apyrexia.

When the paroxyſm is expected, the patient ſhould avoid expoſure to cold. Some have recommended the uſe of the

warm bath. He ſhould avoid taking much food or drink; and if there is no tendency to the inflammatory diatheſis, what he takes ſhould be moderately ſtimulating. Diaphoretics are frequently ſerviceable, given a little before the fit is expected; for if we ſucceed in keeping up a ſweat, the acceſſion of the paroxyſm is often prevented. "Intermittentes tertianas au-"tumnales," Sydenham obſerves, "hoc pacto aggredior Ægro "in lectulo compoſito et ſtragulis undique cooperto ſudores "provoco, ſero lactis cereviſiato, cui ſalviæ folia incocta fuere, "quatuor circiter horis ante paroxyſmi adventum."

It is the general opinion, that the ſtomach and bowels if loaded ſhould be cleared at this period, by the operation of an emetic and cathartic. Few medicines more powerfully promote perſpiration than emetics, and to this their effects in preventing the paroxyſm of agues muſt in part be aſcribed. They ſeem alſo to operate by making a ſtrong impreſſion on the nervous ſyſtem.

The employment of cathartics at this period is a more doubtful practice, and ſeems to have been rather the reſult of hypotheſis than obſervation. Should the acrid contents of the bowels produce ſpontaneous diarrhœa, it may be proper to encourage it by warm diluting fluids. Checking the purging would lay up a ſource of irritation which would not fail to aggravate the ſymptoms of the enſuing paroxysm; but if purging do not ſpontaneouſly occur, it ought not to be induced at this period.

The means which prove ſucceſſful in preventing the paroxyſm of agues in the way I am ſpeaking of, produce either a ſudden and ſtrong impreſſion on the nervous ſyſtem, a quickened circulation, or ſweat.

Purging produces none of theſe, but rather their oppoſites. It makes no powerful impreſſion on the nervous ſyſtem; it

retards the circulation, by enfeebling the powers which ſupport it; and ſo far from promoting ſweat, it even checks it when it has been induced by other means.

Sydenham recommends opium after the operation of the emetic, if this be over before the fit commences. Opium not only makes a ſtrong impreſſion on the nervous ſyſtem, but alſo gives a temporary vigour to the powers ſupporting circulation; and is one of the moſt powerful diaphoretics we poſſeſs.

In whatever manner we uſe opium with a view to prevent the fit, the patient under its operation ſhould be put to bed, kept warm, and ſupplied with tepid diluting fluids.

When we have endeavoured in vain during the firſt paroxyſms to prevent their acceſſion, by inducing vomiting or ſweat, we are not to perſevere in the uſe of theſe means; ſince if they do not ſoon remove the diſeaſe by their debilitating effects, they render it more obſtinate. Dr. Cullen remarks, that endeavouring to prevent the paroxyſm by keeping out a ſweat, has often changed the fever to the continued form.

Many medicines however have been employed with the ſame view, which inſtead of debilitating tend to invigorate. It has been found that a large quantity of the bark received into the ſtomach immediately before the paroxyſm is expected, frequently prevents its return. Dr. Millar and others have obſerved, that an ounce of the bark taken at a ſingle doſe when the fit is expected, not only often prevents the paroxyſm, but ſometimes wholly removes the diſeaſe. This, however, is far from being the beſt mode of giving it. Few ſtomachs can bear ſo large a doſe, and it ſeems to anſwer better when given at intervals as above recommended. In this way not only a greater quantity may be accumulated in the ſtomach and inteſtines at the time of acceſſion; but by giving it at

intervals its effects appear to be accumulated in the ſyſtem; for thoſe of each doſe continue for a conſiderable time after it is taken; ſome ſuppoſe, and not without reaſon, while any part of the medicine remains in the alimentary canal.

A vaſt variety of articles have been employed at this period, chiefly by the vulgar, and have occaſionally ſucceeded in preventing the return of the fit. Theſe are, either ſuch as make a ſtrong impreſſion on the ſtomach, as ſpirit of turpentine, wine, warm ſtrong beer, brandy, &c. with a variety of peppers and other acrid ſubſtances; or ſuch as ſtrongly impreſs the mind, ſwallowing a living ſpider, a powder prepared from human bones, and many other things of this kind.

By regular practitioners the powder of cammomile flowers, wormwood, or other ſtrong bitters, have been uſed in the ſame way. The fœtid gums have alſo occaſionally been ſerviceable; and ſome recommend a variety of external irritating applications, ſalt mixed with the white of eggs, applied to the wriſts, &c.

Such are the means of cure to be employed at the various periods of intermitting fever, between the acceſſion of one paroxyſm and that of the next; between which and the third paroxyſm the ſame mode of practice, varied as the ſymptoms vary, is to be repeated; and ſo on through every interval, till the fever is removed.

If the bark be immediately diſcontinued on the removal of agues, they are apt to return; eſpecially if they have laſted for a conſiderable time, and the patient has been much reduced. It is therefore proper in general to continue the uſe of it for ſome time, gradually diminiſhing the doſe, and giving it chiefly at the periods at which the fever, had it laſted, would have recurred.

It is alſo proper for thoſe who have lately laboured under agues, not only to avoid expoſure to marſh miaſma, but all thoſe circumſtances above enumerated as favourable to its operation. Expoſure to cold, (we have ſeen) irregularities in diet, or any other cauſe which debilitates, is capable of renewing agues.

The rules reſpecting diet and exerciſe in the apyrexia muſt alſo be attended to for ſometime after the removal of the diſeaſe, both in order to prevent its return, and to reſtore the patient's ſtrength.

When expoſure to the causes of agues is unavoidable, as in the rainy ſeaſons of ſultry climates, the bark ought to be uſed as a preventive.*

CHAP. VI.

Of the Modus Operandi *of the Remedies employed in* Intermitting Fever.

It is a law of the animal economy, that an irritating cauſe applied to any part of the ſyſtem, tends to induce ſuch motions as are calculated to remove it. When theſe motions are

* See the 47th and following pages of Dr. Lind's Essay on the means of preserving the health of seamen.

excited in the more minute parts of the animal body, they are traced with difficulty. Thus an extraneous body introduced beneath the ſkin, excites inflammation and ſuppuration, by means of which it is expelled; but we cannot trace all the ſteps of this proceſs. Where the larger parts, however, are thrown into action, we trace with more eaſe the different motions excited, and can often perceive diſtinctly in what manner they operate in removing the offending cauſe. Thus, an irritation of the nares produces a ſudden and violent contraction in all thoſe muſcles which are brought into action when we expire forcibly. The conſequence of which is a ſudden and ſtrong expiration, by which the air being forced violently through the nares, any extraneous body irritating this part is removed. Thus coughing alſo is occaſioned by an extraneous body lodged in and irritating the trachea. We ſee an inſtance of the ſame thing in the involuntary exertions excited by tickling the ſides or the ſoles of the feet. So in vomiting, the irritation applied to the ſtomach induces the action of thoſe muſcles which are capable of expelling its contents.

Concerning the action of the muſcles employed, ſome difference of opinion has ariſen. It has generally been ſuppoſed that the abdominal muſcles and diaphragm act together, by which the ſtomach being forcibly compreſſed between theſe muſcles, its contents are thrown out by the œſophagus. An eminent profeſſor obſerves, that as the patient muſt inſpire if the diaphragm contracts in the act of vomiting, part of the contents of the ſtomach, in their paſſage over the wind-pipe, would be drawn in with the breath. He, therefore, ſuppoſes that the diaphragm immediately before the act of vomiting, is fixed by a ſtrong permanent contraction, and that the contents of the ſtomach are thrown out in conſequence of the ſudden contraction of the abdominal muſcles preſſing the ſtomach againſt the rigid diaphragm.

Concerning this theory of vomiting, it may be obſerved, that we do not find a muſcle acting in the way in which the diaphragm is here ſuppoſed to do, in any analogous caſe. This alone muſt make us heſitate in admitting it. The following obſervation, as far as I am able to judge, altogether ſets it aſide. Both in this and the common account of vomiting, one effect of the violent contraction of the abdominal muſcles is overlooked, that of drawing down the ribs. In the act of vomiting, the ribs are forcibly drawn down, as any perſon will feel by applying the hand to the ſide of the thorax while under the operation of an emetic. We know that if the ribs deſcend, the diaphragm muſt at the ſame moment either contract or yield to the preſſure of the abdominal muſcles, which we cannot ſuppoſe it to do in the act of vomiting. It would, therefore, ſeem that the diaphragm and abdominal muſcles muſt contract at the ſame inſtant; the latter drawing down the ribs, leſſen the capacity of the thorax in one way, in proportion as the deſcent of the diaphragm enlarges it in another. To aſſiſt in depreſſing the diaphragm, expiration, any one may readily perceive in himſelf, is forcibly prevented by his involuntarily preſſing down the epiglottis.

With regard to the peculiar effects of vomiting, by which it tends to put a period to the cold, and induce the hot ſtage of intermittents, we cannot ſpeak with the ſame certainty; there is reaſon to believe that it does ſo, both in conſequence of the ſympathy which is known to ſubſiſt between the ſtomach and the ſurface, and becauſe the agitation which vomiting occaſions proves a ſtimulus to the ſyſtem in general.

With regard to cathartics. Catharſis is induced by a double operation of theſe medicines, which ſtill act, as in the caſe of vomiting, by exciting ſuch motions as tend to expel them from the body. This they do partly by increaſing the peri-

ſtaltic motion of the inteſtines, and partly by increaſing the ſecretion from their ſurface.

It is almoſt unneceſſary to obſerve, that different medicines are fitted to excite different parts of the ſyſtem. Peppers and aromatics ſtrongly affect the taſte, and excite a flow of ſaliva, but they neither occaſion vomiting nor purging. The preparations of antimony which act ſo violently on the ſtomach and inteſtines, are almoſt inſipid.

But the remedies employed during the paroxyſm of an intermittent, whoſe modus operandi has moſt demanded the attention of Phyſicians, are opium and blood-letting.

In a treatiſe, entitled An Experimental Eſſay on the manner in which opium acts on the living animal body, I have endeavoured by comparing the numerous experiments which have been made on this ſubject, whether by myſelf or others, to give a view of the modus operandi of this medicine. It would be improper here to enter on any account of the experiments by which we arrive at this knowledge; I ſhall only quote from the treatiſe the reſult of what is there ſaid.*

* As other authors had given a different account of the result of several experiments related in my treatise. I took an opportunity, in the summer of 1796, when I read a course of lectures on febrile diseases at Edinburgh, of publicly repeating these experiments. The pupils stood as near the table, on which the experiments were made, as their number would permit, and expressed their satisfaction with respect to the result. Many of them were men well acquainted with the subject, and indeed with medicine in general. In the treatise alluded to I have mentioned several circumstances in the experiments in question, which may have occasioned to others, results different from those which occurred to me. A gentleman, however, present at the above meeting, Dr. Woolcomb, suggested a circumstance to which I am now inclined, almost wholly, to attribute this difference, namely, that the au-

The effects of opium on the living animal body may be divided into three claſſes. The firſt, comprehending its action on the nerves of the part to which it is applied, does not differ eſſentially from that of other local irritations. It is doubtful whether the firſt impreſſion made on the ſyſtem by the action of opium on the nerves of the part to which it is applied has ever been ſufficient to deſtroy life.

A large quantity ſuddenly applied to a very extenſive ſurface is capable, perhaps, of inſtantly killing animals leſs tenacious of life than frogs and rabits are, which were the ſubjects of the experiments above alluded to. A variety of ſtrong impreſſions, that, for inſtance, produced by drinking a large quantity of ſpirits of wine, or of very cold water when the body is overheated, are well known to have occaſioned ſudden death. From all the facts with which I am acquainted, however, opium never occaſions death in this way.

The ſecond claſs of the effects of opium according to the diviſion I propoſed, are thoſe on the heart and blood veſſels; namely, that of increaſing their action when it is applied in

thors alluded to had not distinguished the spasms induced by an over-dose of opium, from the voluntary struggles of the animal. This admitted, explains the difference of result, in almost every case. And that the authors alluded to permitted themselves to be deceived in this way is probable, because they take no notice of the spasms occasioned by opium being of a peculiar kind; a circumstance which must have struck them had they properly distinguished these spasms, which, both in the warm and cold blooded animals, always assume the form of that species of tetanus which is termed the opisthotonos. Dr. Woolcomb indeed made the observation in consequence of having sometime before been present when one of these authors repeated the experiments without making this distinction.

ſmall quantity ;* and that of altogether deſtroying it when applied more freely. In neither of theſe effects, however, does the action of opium differ eſſentially from that of other agents. Moſt active ſubſtances applied in ſmall quantities, excite contractions in the muſcular fibre, and deſtroy its power when applied more freely. It does not appear, that the quantity of opium abſorbed by the lacteals, from the largeſt doſe, is ſufficient to deſtroy the muſcular power of the heart merely by its action on that organ. It may be ſafely aſſerted, that opium never kills by deſtroying the muſcular power of the heart, except when a large quantity is injected into it, or into the blood veſſels. Opium received into the ſtomach, therefore, never induces death in this way.

It is aſcertained, by the experiments related in the above treatise, that the action of the ſtrongeſt ſolution of opium applied to the heart, is merely local; it deſtroys the excitability of this organ, but it produces no other effect; the excitability of all the other muſcles of the body remaining unimpaired. It is almoſt unneceſſary to obſerve, that I here ſpeak of the effects of opium when its application is confined to the heart; if it is allowed in the courſe of circulation to paſs to the brain, it then produces the effects which form the third claſs.

Theſe, when the doſe is moderate, are impaired ſenſibility, languor, ſleep; effects which are occaſioned, in a greater or leſs degree, by all other gentle irritations of this organ, and which do not follow a moderate doſe of opium till we know from the ſymptoms it produces, compared with the experiments which have been made on this ſubject, that it has been

* Compare a note in the 99th page of my Essay on Opium with Dr. Crumpe's experiments on the pulse. See Dr. Crumpe's Treatise, entitled "An Inquiry into the Nature and Properties of Opium.

conveyed to the heart; from which, in the courſe of circulation, it is sent to the brain, as well as to other parts of the body. What ſhare its action on the latter parts has in producing theſe effects, it is impoſſible to ſay. We have reaſon to believe it but trifling, becauſe opium directly applied and confined to the brain, produces the ſame effects on the nervous system, as when it is permitted to circulate with the blood. It appears from the experiments juſt alluded to, that no part of theſe effects is to be aſcribed to its action on the heart itſelf.

Opium applied to the brain more freely produces effects ſimilar to thoſe produced by other violent irritations of this organ—convulſions and death. And this is the way in which opium received into the ſtomach, occaſions death: it is taken up by the lacteals, and in the courſe of circulation applied immediately to the brain. According to the quantity thus applied, it produces ſleep, convulſions, or death; for opium, even in the human body, does not always prove fatal when it induces convulſions.* It appears from the foregoing obſervations that in all its effects on the living animal, opium has much in common with other agents; at the ſame time we can perceive in each, as pointed out in the above treatiſe, ſomething peculiar to itself.

The effects of opium, on which the benefit derived from it in agues appears to depend, are the impreſſion it makes on the nervous ſystem, and its increaſing the action of the heart and blood veſſels, which being combined with the effects of thoſe medicines that relax the ſkin, tends to induce perſpiration.

* In some of the experiments alluded to in the Treatise I have been speaking of, convulsions were induced on rabbits by large doses of opium, which were not sufficient, however, to prove fatal; and there are several cases on record in which this happened in the human body. See cases related by Mr. Dobson and an anonymous author in the Medical Museum.

There is no remedy whofe modus operandi demands more attention than blood-letting.

We know that the heart, deprived of the ftimulus of the blood, ceafes to contract almoft inftantly in the human body, and in a fhort time in all animals. The prefence of the blood, therefore, is as neceffary for the continued action of the heart, as the peculiar ftructure by which it is fitted for contraction. But every thing capable of exciting contractions in the mufcular fibre, produces within certain limits more or lefs powerful contractions, in proportion to the quantity applied.

In the change from a ftate of health to fynocha, one of three things muft take place; either the blood is conveyed to the heart in greater quantity than ufual, or it becomes more capable of ftimulating the heart, or the heart itfelf becomes more capable of being acted upon, and thus contractions more powerful than thofe confiftent with health are excited.

Whichever of thefe be the caufe of the ftronger action of the heart in fynocha, it ftill holds good, that the effect of the ftimulus is within certain limits proportioned to the quantity applied, and confequently that leffening the quantity of blood muft diminifh the force of its contractions.

The following experiment directly afcertains the point, which is otherwife fo well eftablifhed indeed as not to require this additional proof: Dr. Hales opened the blood veffels of living animals, adapted glafs tubes to their orifices, and obferved to what height the blood rofe in the tubes at each fyftole of the heart; he then drew from the animals different quantities of blood, and obferved the force of the heart diminifh in proportion as the blood was abftracted.

It muft alfo happen, that the more fuddenly the abftraction of blood is made, the greater will be its effect in diminifhing the force of the heart and veffels, for the fame obfer-

vations apply to them. When it is gradually abſtracted, their capacity is readily adapted to the quantity which remains. When more suddenly, the change of capacity is effected with greater difficulty. The diminiſhed action of the powers ſupporting circulation, when the abſtraction of blood is made ſuddenly, is in a great meaſure to be attributed to the veſſels not immediately adapting themſelves to their contents, and conſequently the quantity of blood returned to the heart, being more diminiſhed than in proportion to the real loſs of blood. It ſeems to be in this way, that the loſs of a few ounces of blood very ſuddenly abſtracted, often induces ſyncope, even in ſtrong people who could loſe ſix times the quantity without inconvenience were it abſtracted more ſlowly. Syncope from loſs of blood in general indeed, muſt in a great meaſure depend on this cauſe. Did it proceed from the abſolute loſs of blood it would be much more fatal than we find it. It was common with the Ancients, in a variety of diſeaſes, to bleed the patient till he fainted, and this is ſtill recommended in ſome caſes.

If diminiſhing the action of the heart and blood veſſels, be the only effect of blood-letting in idiopathic fevers, it follows, that this remedy can only be of ſervice in theſe diſeaſes when the ſymptoms of ſynocha prevail. Till lately indeed it has been the practice to have recourſe to blood-letting in typhus as well as ſynocha. This practice was chiefly founded on hypotheſis; in part, however, it was countenanced by obſervation. There can be little doubt that a ſpontaneous hemorrhagy ſometimes proves a favourable criſis in typhus, but it is very doubtful whether the hemorrhagy is the cauſe or conſequence of the favourable change; I am inclined to the latter opinion becauſe I have not, either in the courſe of practice or reading, met with any unequivocal caſe in which artificial loſs of blood was of decided advantage in this fever. If the ſtate

of body in ſome rare caſes of typhus be such, that the advantages derived from veneſection will more than compenſate for the harm done by its debilitating effects; nobody has yet ſucceeded in pointing out the means of diſtinguiſhing ſuch caſes.

We ſhall afterwards find reaſon to believe that the other ſymptoms, which are termed critical, a flow of ſweat, a ſediment in the urine, &c. are alſo rather the conſequences than the cauſes of the favourable change which attends them.

One part of the modus operandi of blood-letting has as far as I know been over-looked by writers. It chiefly reſpects thoſe caſes in which the diſeaſe is wholly or in part local. We know that in inflammation of the lungs, for example, or of the abdominal viſcera, great relief is often obtained by taking ſuch a quantity of blood from the ſkin, in the immediate neighbourhood of the inflamed part, as would produce little or no effect if taken from a diſtant part. Why this ſhould be the caſe it ſeems difficult to ſay, becauſe there is often no direct communication of veſſels between the diſeaſed part and that from which the blood is taken; between the ſkin of the cheſt and lungs, for example, that of the abdomen and bowels, &c. This queſtion ſeems to be of the ſame nature with the following; why is inflammation apt to ſpread to contiguous parts, although there is no direct communication of veſſels, from the bowels to the parietes of the abdomen, from the lungs to thoſe of the cheſt, and *vice verſa?* Inflammation of the bowels is almoſt as apt to ſpread to contiguous bowels, as in the courſe of the veſſels of the inflamed part, I mean before any adheſion of parts takes place. The adheſion does not ſeem to take place till after both ſurfaces have been inflamed.

For an explanation of ſuch phenomena we muſt look to the ſympathy which exiſts between different parts of the body

through the medium of the nervous ſyſtem. This explanation ſeems to be ſupported by a curious fact, which we ſhall ſee fully illuſtrated in conſidering the Phlegmaſiæ, that in thoſe caſes where the inflammation exiſts in one part, and the pain is referred by nervous ſympathy to another, which is ſound; the latter, if the diſeaſe continues, will alſo become inflamed, although the cauſe of the inflammation is wholly confined to the part firſt affected. This we ſhall find has been clearly aſcertained by diſſection. We have a familiar inſtance of it in ſome caſes of hepatitis. The pain is often referred to the top of the ſhoulder; it is evident, however, that at the commencement, there is no diſeaſe in the latter part, we may preſs and rub it without giving any uneaſineſs; but after the pain has for a conſiderable length of time been referred to it, it often, as I have repeatedly obſerved, becomes ſo tender that the patient can hardly bear it to be touched. And if the hepatitis is relieved, although by means as much as poſſible confined to the region of the liver, the affection of the ſhoulder yields with it. It may then be preſſed or rubbed as before.

Thus we ſee that local blood-letting not only relieves the veſſels of the part from which the blood is taken, but alſo of the parts which ſympathiſe with it, that is, ſometimes of diſtant parts, but always of neighbouring parts, for all neighbouring parts ſympathiſe. Theſe obſervations thus far apply to general blood-letting, that as the heart and largeſt veſſels contribute moſt to ſupport the circulation, there is ſome advantage in taking the blood from thoſe parts which moſt ſympathiſe with them; hence appears to be the advantage of bleeding from the upper rather than the lower extremities.

On the modus operandi of the means employed during the apyrexia, I have only to remind the reader of a few obſervations which have already been made.

I have had occaſion to point out the way in which the medicines given at the time the fit is expected, ſeem to act. The effects of many of theſe can only be aſcribed to the impreſſion made on the nervous ſyſtem, ſince they are too ſudden to be attributed to any change induced on other parts. It is only in this way that we can account for the effects of the bark, when the paroxyſm is prevented by this medicine given only half an hour before the time at which it ſhould have appeared. And when we reflect on the obſervation of Dr. Jackſon, Dr Monro, and others, that if we perſevere in giving the bark, the fever will be removed, although the medicine is conſtantly diſcharged by vomiting and ſtool; we have every reaſon to believe, that in whatever way the bark is exhibited, its effects in the cure of agues are to be attributed to its action on the nerves of the ſtomach and inteſtines.

The circumſtance of agues being frequently removed by affections of the mind prove, that they may be cured by means acting wholly through the medium of the nervous ſyſtem.

BOOK II.

OF CONTINUED FEVER.

Continued Fever is defined in the Introduction, an Idiopathic Fever with ſlight remiſſions and exacerbations.

For the ſake of perſpicuity, this fever was divided into two Genera, the Synocha, and Typhus.

The Synocha was defined, a continued fever, in which the temperature of the body is greatly raiſed, the pulſe frequent, ſtrong, and hard, the urine high coloured, and the ſenſorial functions but little diſturbed.

Typhus, it was obſerved, is characteriſed by being a contagious diſeaſe, by the temperature being little raiſed, the pulſe ſmall, weak, and frequent, the urine little changed, the ſenſorial functions much diſturbed, and the ſtrength greatly reduced.

It was remarked, however, that although this diviſion is uſeful in practice, and ſtill more in acquiring a knowledge of continued fever, it cannot be regarded as accurate, ſince we ſcarcely ever meet with ſimple Synocha or Typhus; almoſt every continued fever aſſuming the form of the Synochus, that is, being a combination of the Synocha and Typhus, beginning with the ſymptoms of the former, and terminating in thoſe of the latter. In the proportional degree in which either ſet of ſymptoms prevails, there is infinite variety; and it is convenient to apply the terms Synocha, or Typhus, according as the ſymptoms of the one or the other predominate.

CHAP. I.

Of the Symptoms *of* Continued Fever.

The ſymptoms of continued fever are leſs regular and more protracted than thoſe of agues. The cold ſtage is more frequently abſent, and generally conſiſts of irregular chills, or of ſhort fits of cold and heat, which frequently alternate with each other for the firſt day or two, and often continue to do ſo, after the temperature of the body, meaſured by the thermometer or the feeling of another perſon, is uniformly raiſed.

The cold and ſhaking are never ſo ſevere as in agues, but the attending ſymptoms, langour, wearineſs, foreneſs of the fleſh and bones, head-ach, &c. are often equally ſo. The pulſe during the chills in typhus, as in the cold ſtage of agues, is ſmall and frequent; but in ſynocha, even during the chills, it is often ſtrong, regular, and full.

It is generally leſs frequent at the commencement of continued, than at that of intermitting fever.*

Theſe ſymptoms are at length ſucceeded by more permanent heat, often partial at firſt, ſoon becoming general. But the change from the cold to the hot ſtage is more gradual than in intermitting fever.

As the hot ſtage advances, the various functions are affected in the ſame way as in agues; but the heat, except in well-marked ſynocha, is generally leſs in continued, than in inter-

* See Dr. Fordyce's third Dissertation on Fever. Part I.

mitting fever. It is not, as in the latter, relieved in a few hours by ſweat, but continues along with the other ſymptoms of the hot ſtage, ſuffering more or leſs evident remiſſions, once or twice in the day, often for weeks, or even months; and at length frequently leaves the patient gradually, without a remarkable increaſe of any of the excretions.* In other caſes, the ſymptoms of continued fever are more ſuddenly relieved in various ways, afterwards to be pointed out.

During the firſt days of the diſeaſe the ſymptoms generally return with increaſed violence after the ſlight remiſſions which take place; if they do ſo for many days the danger is great. When they begin to return with leſs violence after each remiſſion, the prognoſis is favourable.

It frequently happens, however, that the ſymptoms continue to return with nearly the ſame degree of violence for many days; and then, if they are not alarming, and the patient bears them without a remarkable diminution of ſtrength, although the disease will prove lingering, the event will probably be favourable.

Such are the general courſe of continued fever, and the principal circumſtances in which it differs from agues. It is

* During the exacerbations the heat generally rises one or two degrees above the mean heat of the fever in the trunk, and more in the extremities. See Dr. Currie's Med. Reports on the effects of water, cold, and warm, &c. In the cold stage of continued fever, Dr. Currie observed the heat under the tongue as low as 92° of Farenheit, and he mentions 105° as the highest degree of febrile heat generally observed; but he takes notice of one case of continued fever, in which it was as high as 108°. While the cold stage is changing to the hot, he remarks, some parts of the body are above, while at the same time others are below, the healthy degree; nor is the heat diffused with any regularity, but is sometimes greater in one place, sometimes in another, and this irregularity continues till by degrees the heat becomes general and steady.

neceſſary to conſider its ſymptoms at greater length; and it will be the moſt diſtinct plan, to give separately thoſe of the two ſpecies, into which it has been divided.

SECT. I.

Of the Symptoms of Synocha.

The ſymptoms of synocha are as ſimple as thoſe of typhus are complicated. The proſtration of ſtrength, which precedes the attack of fevers, is generally less conſiderable; and the cold ſtage is more frequently abſent in ſynocha, than in typhus.

The pulſe, even in the cold ſtage, is ſeldom ſmall or very frequent; after the heat commences, it becomes full, rapid, equal, or, has it as been termed, vibrating; ſtill, however, its frequency is leſs than it often is in thoſe fevers in which debility prevails.

The reſpiration is frequent, hurried, generally oppreſſed, and attended with a dry cough.

The heat is greater than in other continued fevers, and of that kind which has been termed burning, in contradiſtinction to acrid.* The face is full and florid; the eyes inflamed and incapable of bearing the light.

The ſecreting powers are more completely ſuſpended than in moſt caſes of typhus. The ſkin, mouth, and throat are dry, and the mucus covering the tongue becomes foul and viſcid. The urine is ſcanty and high-coloured, and the bowels coſtive.

* See the observations on the heat in typhus, in Sect. ii. of this chapter.

The head-ach is generally conſiderable with watchfulneſs, throbbing of the temples, or tinnitus aurium. The depravation of the ſenſes, however, is leſs frequent in ſynocha than in typhus, nor is delirium a common ſymptom of this fever; but when it does occur, it riſes to a degree which from the debilitated ſtate of the ſyſtem we hardly ever meet with in typhus. The patient becomes frantic, and ſeems to acquire preternatural ſtrength.

When the delirium is obſtinate, or the patient is oppreſſed with coma, we have reaſon to ſuſpect an inflammatory affection of the brain. In enumerating the ſymptoms of phrenitis, I ſhall have occaſion to point out the circumſtances which form the diagnoſis between this diſeaſe and ſynocha.

It is ſaid that when ſynocha proves fatal in a few days (which, if it ever happen, is a rare occurrence) the pulſe, does not become weak or intermitting before death; the patient ſeems to be carried off by the violence of the excitement.

When the diſeaſe continues for a longer time, however, and the remiſſions are at all evident, the pulſe during theſe (although the fever has not yet aſſumed the form of typhus) becomes weak and languid, the patient appearing to be exhauſted by the foregoing paroxysm; which is ſoon renewed, however, with its former violence.

Hemorrhagies, which frequently occur in this fever, are generally from the noſe, ears, lungs, rectum (if the patient happen to labour under the hemorrhoids) or from the uterus; and are almoſt always favourable; the blood diſcharged has the healthy appearance, except that the coagulum is frequently covered with the buffy coat.* Hemorrhagies from the higher parts of the inteſtines, kidneys, urethra, ſkin,

* We shall afterwards have occasion to consider this appearance.

eyes, &c. are rarely, the two laſt perhaps never, obſerved in ſynocha.

Such are the ſymptoms of well marked ſynocha. They vary in different caſes from thoſe juſt enumerated, to the mild febrile ſymptoms attending a common catarrh.

After they have continued for ſome time, they always, at leaſt in this country, begin to be changed to thoſe of typhus. The proportional duration, as well as violence, of the ſynocha and typhus, is different in different caſes; and proves an endleſs ſource of variety. The manner in which the ſymptoms of ſynocha are changed into thoſe of debility, alſo varies much. The duration of continued as well as intermitting fevers is ſhorter, their ſymptoms more violent, and their changes more rapid, in the warm, than in the cold, and temperate climates.

The ſymptoms which follow the ſtate of increaſed excitement, are the moſt dangerous, as well as moſt varied part of the fever.

SECT. II.

Of the Symptoms of Typhus.

An uneaſy and peculiar ſenſation in the ſtomach, ſometimes attended with nauſea and giddineſs, frequently denotes the approach of those fevers, in which the ſymptoms of debility prevail.* In many caſes, however, this ſenſation is ſcarcely, or not at all, perceived, and the fever comes on with laſſitude, anxiety about the præcordia, alternate heats and chills, or a

* Dr. Jackson's Account of the Fevers of Jamaica, Dr. Smith on the Jail Fever of Winchester, &c.

ſenſe of creeping in different parts of the body, which has been termed horripilatio.

The patient complains of uneaſineſs of the head, and fixes his attention with more difficulty than uſual; is dejected and wiſhes to be alone. His appetite is impaired, he becomes reſtleſs, or if he remains long in the ſame poſture, it is rather a ſenſation of languor, than of eaſe, which prevents him from changing it.

Either ſleep forſakes him, or he is more inclined to ſleep than uſual, and then his ſleep is ſuch as does not refreſh, diſturbed by groans and ſtarts.

At this period the pulſe for the moſt part is frequent, ſmall, and eaſily compreſſed; in other caſes it is nearly natural, and the patient often labours for ſome days under more or fewer of theſe ſymptoms, not well enough to engage in buſineſs, nor ſufficiently indiſpoſed to be confined to bed.

The firſt ſymptoms of typhus are often more ſevere. It makes its attack with a troubleſome head-ach, acute pains in the back, loins, and extremities, which often reſemble a general rheumatic affection, a diſtreſſing ſenſe of wearineſs, much thirſt, and nauſea, ſometimes attended with a burning pain of the ſtomach, more frequently by vomiting, vertigo, dimneſs of ſight, or numbneſs of the extremities.

In ſome inſtances, the rigors from the firſt are ſtrong, the pulſe ſoft, ſmall, frequent, and ſometimes irregular. The general uneaſineſs, confuſion of head, and dejection of ſpirits exceſſive. There is often great debility from the very commencement. The tongue trembles impeding the ſpeech, the limbs ſhake, and the patient with difficulty ſupports himſelf. There are even inſtances of people, on the firſt attack of typhus, falling ſuddenly to the ground, as if ſhot.* There are few diſ-

* This sometimes happened in the late dreadful fever of Grenada, described by Dr. Chisholm.

eaſes in which the ſymptoms are more varied, either in the commencement or progreſs.

Of the State of the Animal Functions in the Progreſs of Typhus.

As the diſeaſe advances, the debility of the muscles of voluntary motion increaſes. In the advanced ſtage, the patient, incapable of any exertion, lies on the back, and if turned on either ſide, ſoon reſumes this poſture. He even ſlides insenſibly towards the foot of the bed, and has not power, although he underſtands what is ſaid to him, to put out his tongue, which is effected with a tremulous motion. Sometimes tormented with extreme anxiety, he is conſtantly changing his poſture, in other caſes the limbs are affected with numbneſs or palſy, more frequently they are moved by a conſtant twitching of the muſcles, which now and then proves the forerunner of general convulſions, in which the patient expires; ſometimes in the firſt attack, more generally after ſeveral returns. In ſome caſes the muscles of the limbs are affected with more permanent ſpaſm, and caſes are on record, in which complete tetanus has ſupervened towards the fatal termination of malignant fevers.*

The head-ach is often a ſource of great uneaſineſs. It moſt frequently has its chief ſeat in the forehead, ſomtimes in the occiput, and in ſome caſes in the under part of the orbits, ſometimes the orbit of one eye. It is generally attended with ſtrong throbbing of the temples; the carotid and temporal arteries often beating ſtrongly, while the pulſe at the wriſt is ſmall and weak.†

* See Vogel, De Cog. et Cur. Morb. and others.

† When this state of the circulation is obstinate, and accompanied with an acute or deep seated pain of the head, or with a considerable degree of coma or delirium, it generally denotes an inflammatory affec-

The confuſion of head increaſes with the debility, and often on the ſecond or third night a degree of delirium comes on, which goes off, however, on the ſucceeding day, and continues to return in the evening for ſeveral days. As the ſymptoms increaſe, a wandering of the mind remains throughout the day, and ſometimes riſes at night to a degree of phrenzy, reſembling the delirium of ſynocha. More frequently, however, the patient is rather ſtupid than violent. At a more advanced period he continues uniformly ſullen and ſad, muttering to himſelf as if brooding over some misfortune. The countenance is dejected, and the eyes heavy and inflamed. When the evening exacerbations are remarkable, the countenance appears more lively, the dull appearance of the eyes eſpecially is leſs obſervable, and the patient is then eaſily irritated, ſpeaks quick and anſwers haſtily. In other caſes inſenſibility, or as it is termed in fever, coma comes on. If this increaſes, the jaw at length falls, and the patient lies in a ſtate of apoplexy.

The different organs of ſenſe are variouſly affected in the progreſs of typhus. Deafneſs is generally, not always, a favourable ſymptom.* A depravation of the ſight is always unfavourable. As the fatal termination approaches, the pa-

tion of the brain or its membranes. In these cases, abscesses are now and then found in the encephalon after death. Cases of this kind are related by Sir John Pringle and others. Dr. Fordyce has justly observed, however, that abscesses of the brain very rearly occur in the fevers of this country. The same throbbing, also frequently indicating an inflammatory affection, is sometimes observed in other parts of the body, particularly in the fevers of warm climates. "In the yellow fever," Dr. Linning observes, "there is a remarkable throbbing in the "temporal arteries and hypochondria; in the latter sometimes so "great, as to cause a constant tremulous motion of the abdomen."

* Dr. Rush and others mention fevers in which deafness was a very unfavourable symptom.

tient frequently ſtarts up, catching at things which he ſees paſſing before him, or picks the bedclothes, which appear to him ſtriped or covered with black ſpots; ſometimes every thing appears indiſtinct as if ſeen through a miſt. The eyes indeed are variouſly affected throughout the diſeaſe; and ſome aſſert, that from their appearance alone the ſtate of the fever may be aſcertained. In the commencement of typhus they are duil and languid; the tunica albuginea having a bluer, and ſometimes whiter, appearance than ordinary. In the furious delirium they are red, quick, and piercing; in the comatoſe, they are generally inflamed alſo, but heavy, half ſhut, and as if glazed. The laſt of theſe appearances indicates much danger; but the prognoſis is ſtill worſe, if blood flow from them. For ſome time before death they appear hollow, involuntary tears ſometimes fall from them, and they become fixed and gloſſy. The ſenſibility of the ſkin ſeems often much impaired; and the taſte and ſmell are frequently depraved or loſt. The patient often complains of a nauſeous bitter which mixes itſelf with every thing he takes.

Of the State of the Vital Functions in the Progreſs of Typhus.

The pulſe continues ſoft, weak, ſmall, and frequent:* and

* In tedious fevers, in which the ſymptoms are moderate, the pulse is often as slow as natural for some hours during the day; and in the more malignant forms of typhus, it has sometimes been observed a great deal slower. I mean even in those of this country. In the fevers of some tropical climates, this is much more frequently the case. This state of the pulse in malignant fevers is taken notice of by a variety of authors, particularly by those who give an account of the fevers of the West Indies. Dr. Fordyce, in one of his Dissertations on Fever, ob-

thefe ftates of it increafing as the difeafe advances, it often becomes intermitting, or otherwife irregular. As death approaches, its weaknefs and irregularity become more remarkable, till at length the extremities grow cold and it cannot be felt. This fometimes happens ten or twelve hours before death. There is a tendency to fyncope on the flighteft exertion, particularly in the erect pofture; and for fome time before the fatal termination, the debilitated ftate of the circulation occafions a fhrinking of the features, and confpires with

serves, that the pulse is sometimes as low as 50 or even 45. In the late dreadful fever of Philadelphia, Dr. Rush found the pulse at 44, and in one instance as low as 30.

The pulse at a certain period of the yellow fever becomes as slow or slower than natural, and continues so till within a short time of the patient's death, for recovery is rare after this change of the pulse takes place. When the pulse becomes slow, the heat at the same time sinks to the natural standard, and sometimes below it. This and the other peculiarities of the fevers of sultry latitudes depend on some local affection. The slow pulse indicates an affection of the brain, which is farther indicated in many cases of the yellow fever by a dilatation of the pupil and squinting. Dr. Chisholm particularly takes notice of the slow pulse and dilatation of the pupil in the fever of Grenada, and found water in the ventricles of the brain in those whom he examined after death.

The yellow fever is so called from the skin being tinged with yellow; when the yellowness is late in appearing, it sometimes comes on so suddenly that the patient almost instantly becomes of a yellow, deep orange, or copper colour. This circumstance, together with the urine and discharge from blistered parts not always appearing yellow when the skin is so, demonstrate, contrary to what was once supposed, that the yellow colour is not owning to the presence of bile in the circulating fluids.

It somtimes happens towards the fatal termination of malignant fevers, that the pulse at the wrist, before it is wholly lost, beats for some time less frequently than the heart.

the relaxation of the muſcles of voluntary motion to occaſion what has been termed the *Facies Hippocratica*, a preſage that cannot be miſinterpreted by the moſt inexperienced. The face aſſumes a livid, cadaverous appearance, the noſe is ſharpened, and the cheeks become hollow. In the progreſs of typhus, the face during the exacerbations is generally fluſhed, and pale in the remiſſions. In both it often has a bloated appearance. There is an expreſſion of countenance peculiar to this fever which cannot be deſcribed, but is eaſily recogniſed by those who have ſeen it.

The ſtate of the breathing correſponds to that of the circulation; it is weak, generally frequent and interrupted with ſighing or a dry cough; but as the debility increaſes, it often becomes calm and less frequent than natural, ſometimes rattling.

The voice is low, weak, often ſhriller or hoarſer than natural, and ſometimes wheezing. Its being much affected in any of theſe ways affords an unfavourable prognoſis. It is always a favourable ſign when it again becomes natural.

The heat of the body at the commencement of typhus is ſeldom much increaſed, and even in the progreſs of the diſeaſe is ſometimes little more than natural.* But in general, after the firſt days, eſpecially when the worſt ſymptoms ſhew themſelves, a perſon touching the patient perceives a heat of a penetrating kind, which remains in the hand for ſome time after it is removed from the patient.†

* This is often the case in what has been termed the nervous fever, the Typhus Mitior. "Calor non raro naturalem vix superans," Frank observes, in describing this fever. It is not uncommon in malignant fevers, particularly those of warm climates, for the extremities to be considerably below the natural temperature, while there is a burning heat in the breast and other parts of the trunk.

† This peculiarity of the heat in typhus has been remarked by a va-

*Of the State of the Natural Functions in the Progreſs of Typhus.**

The tongue at the beginning is covered with a thin white mucus; as the diſeaſe advances, this mucus becomes thicker and of a brownifh colour, and the clamminefs of the mouth and brown colour of the tongue generally increaſe with the fever. In the advanced ſtage deep chops often form in the tongue, the mucus covering it becomes fetid, dry, and firm, and a correſponding change taking place in that which beſmears the teeth and other parts of the mouth, and probably alſo in the mucus of the trachea and bronchiæ, the breath becomes offenſive, and the deficiency of moiſture renders the

riety of authors. "In the beginning," Sir John Pringle obſerves, "the "heat is moderate, and even in the advanced ſtate, on firſt touching "the patient, ſeems inconſiderable; but upon feeling the pulſe for "some time, I have been ſenſible of an uncommon ardour, leaving an "unpleaſant ſenſation in my fingers for a few minutes after. The firſt "time I obſerved this," he continues, "I referred it to the force of "imagination; but I was aſſured of the reality by repeated experi-"ments, and by the teſtimony of others, who, without knowing my "obſervations, had made the ſame remark."

Dr. Moore, in his Medical Sketches, Dr. Huxham, in his work on the ulcerous Sore-Throat, and others have alſo taken notice of this peculiarity of the heat in typhus. Frank obſerves of it, "sæpe mani-"feste acer digitosque urens." Dr. Wright calls it a biting heat. (Annals of Med. vol. 2.) It was remarked, in ſpeaking of intermittents, that Galen makes a ſimilar obſervation reſpecting the heat in ſome of them.

* I have here adopted the uſual diviſion of the functions into animal, vital and natural; the reader, however, will readily perceive that there is no well defined line of diſtinction between the two laſt.

ſpeech inarticulate. Sometimes, however, the tongue continues moiſt to the end of the diſeaſe, and then, particularly in the middle, it often aſſumes a yellowiſh or greeniſh appearance.

In other caſes it is dry and ſmooth, of a ſhining dark red, which at laſt becomes brown or almoſt black, while at the ſame time a black furring covers the lips and teeth. The laſt appearance of the tongue ſometimes ſupervenes in the progreſs of fever, although at an earlier period it has been covered with mucus.

There is often a difficulty of ſwallowing from the dryneſs, ſometimes from a paralytic affection, now and then from convulſive * contractions of the throat.† The fauces are ſometimes covered, particularly towards the end of the diſeaſe, with apthæ, that is, ſpecks of a white, brown, or blackiſh colour, often becoming ulcerous; and when they occur in the worſt kinds of fever, very commonly the forerunner of mortification. We ſhall have occaſion to conſider this eruption more particularly, when I come to ſpeak of it as characteriſing a variety of fever.

The patient complains of thirſt, which is ſeldom, however, ſo urgent as in the ſynocha,‡ the appetite is impaired or wholly loſt: and nauſea and vomiting are frequent ſymptoms at an early period. The matter rejected is frequently a viſcid, colourleſs, tranſparent fluid, without much taſte or ſmell;

* Even the hydrophobia has been known to supervene towards the fatal termination of malignant fevers.

† If the respiration and deglutition be free, Dr. Fordyce observes, the prognosis is seldom bad, although the other symptoms appear alarming.

‡ Not to complain of thirst, when the mouth and fauces are very dry, is an unfavourable symptom, as it generally denotes a considerable degree of insensibility. In the low nervous fever, however, even when the sensibility is not impaired, there is often no thirst.

an aſtoniſhing quantity of which is often ſecreted in fevers. It is frequently mixed with, and ſometimes the matter diſcharged almoſt wholly conſiſts of, bile; often in a very vitiated ſtate, eſpecially in the fevers of warm climates.*

The bowels, as in other fevers, are generally coſtive, except there be irritating matter in them, and are often affected with flatulence and ſpaſmodic contractions. A little before death, an ichorous diarrhœa frequently occurs, without any evident cauſe; this is always one of the worſt ſymptoms. At an earlier period, diarrhœa is for the most part ſalutary.

The appearances of the urine are various. Sometimes it is pale or limpid, which is never a favourable appearance; ſometimes high coloured, and turbid, often giving a good deal of uneaſineſs in being diſcharged, which is ſometimes favourable, and is never to be regarded as unfavourable. The ſame cannot be ſaid of the urine appearing brown, and depoſiting a matter like coffee grounds. This is owing to an admixture of blood, and is uniformly a bad ſymptom. Sometimes the urine is of a dark olive colour, the effect of bile in the circulating ſyſtem. It ſometimes depoſits a lateritious, or branny ſediment, theſe have been termed the critical ſediments, and their appearance is generally, though not univerſally, a favourable ſymptom. In ſome epidemics it has been found a

* The black vomiting, a symptom so much dreaded in the fevers of sultry climates, in which the matter discharged resembles coffee grounds, appears to be the consequence of a very vitiated state of the bile, which assumes this appearance. When the progress of the fever is rapid, Dr. Jackson observes, this matter is often as black as soot. When it is more gradual, it is not so dark, and often of a greenish colour. The bile in these fevers is often passed also by stool in so acrid a state as to inflame and excoriate the anus and parts in its neighbourhood. Towards the fatal termination, the stools in the yellow fever of the West Indies often assume the appearance of tar or molasses.

very fatal one.* Thefe fediments have obtained much of the attention of phyficians, and have given rife to fome very ill-founded hypothefes. I fhall have occafion to fpeak of them at greater length, in confidering the crifes of fevers.†

The urine is fometimes fuppreffed, or paffed in fmall quantity, although the bladder is diftended. This is an unfortunate accident from the irritation it occafions. Sometimes it is fuppreffed without pain or diftenfion of the bladder, which denotes a fufpenfion of the fecreting powers of the kidneys, and affords a more unfavourable prognofis.

The fkin for the moft part is dry; fometimes a moifture is obferved on it, particularly in the mornings, and while this continues, there is generally fome abatement of the fymptoms.‡ In fome cafes a freer difcharge by the fkin takes place, but this fymptom with the manner in which we form the prognofis from it, will alfo be confidered at fome

* See Dr. Linning's Observations on the Yellow Fever of America, in the 2d vol. of Essays and Observations, Physical and Literary.

† In particular epidemics the urine has assumed a variety of uncommon appearances, probably depending on some affection of the urinary organs, but none of these have been very distinctly marked. Thus, Dr. Chisholm observes, the urine was sometimes green, sometimes inclining to black, and of an oily consistence. Those which have been mentioned are the more common changes which happen in the progress of fever. Dr. Fordyce has attempted to describe a state of the urine which he regards as peculiar to malignant fevers, and his account is probably accurate; but the circumstances which characterise this state of the urine do not admit of being sufficiently defined to enable common observers to distinguish it. "The urine has a more "viscid appearance than common; is frothy, browner, and not ab-"solutely transparent, although there is no cloud or sediment." Dr. Fordyce's 3d Diss. on Fever. Part 1.

‡ In malignant fevers the sweat often tinges the linen with an ichorous appearance. Fordyce's 3d Diss. on Fever.

length, in speaking of the crifes of fevers. It may, according to the circumftances which attend it afford a very good, or very bad, prognofis.

I have already had occafion to obferve, that hemorrhagies are to be regarded as unfavourable in typhus. Hemorrhagies from the eyes and kidneys have already been mentioned.* It would not, we fhould fuppofe, a priori afford a much better prognofis when blood flows from the ftomach and inteftines, occafioning a vomiting of blood, and tinging the ftools with a dark red, or blackish colour. Thefe, however, are much lefs fatal appearances, and I have often feen them attend a general abatement of the fymptoms. There is perhaps no hemorrhagy which may be regarded as affording a more unfavourable prognofis in typhus, than that from the pores of the fkin; which is not an uncommon occurrence in the worft forms of the difeafe. The blood in these cafes is particularly apt to flow from bliftered parts, from old fores, or wounds, although quite healed up, from the holes, for inftance, made in the ears for earings, or places where the patient on former occafions had been let blood, &c. In the worft cafes of malignant fever, indeed, blood, or rather a thin ferum, in which more or fewer of the red globules are broken down and fufpended, fometimes runs from almoft every furface of the body, whether external or internal.

The epiftaxis is the moft favourable hemorrhagy in typhus. This alfo indeed is often a bad fymptom, efpecially when the blood falls only in drops; when it flows more freely, it has fometimes been attended with a fudden and favourable change,

* Dr. Linning observes of the bloody urine in typhus, that he always found the admixture of blood become less, when the pulse acquired any degree of fulness, and again increase as the pulse sunk; denoting how much such hemorrhagies depend on a debilitated state of the system.

Other hemorrhagies, enumerated among the ſymptoms of ſynocha, alſo occur, though leſs frequently, in typhus. Theſe are not ſo often favourable as the epistaxis, but more ſo than thoſe which more peculiarly belong to typhus.* I ſhall have occaſion to recur to this ſubject in ſpeaking of the criſes of fever.

It ſometimes happens in typhus, that the blood which flows from the veſſels of the ſkin is detained beneath the cuticle, giving the appearance of ſmall round ſpots, which have been termed petechiæ. So frequent are petechiæ in the typhus gravior, that this fever has got the appellation of typhus petechi-

* Dr. Fordyce, in his 3d Dissertation on Fever, gives the following account of the state of the blood in malignant fevers. It is the best I have met with. " At the beginning, when the putrefaction has not " gone to any great length, if blood should happen to have been taken " from the arm, the coagulum is loose and easily broken, the serum " being hardly of a browner colour than common. Somtimes, when " the depression of strength is not very great, the blood retains this ap- " pearance during the whole course of the disease.

* * *

" If there is greater depression of strength, and by consequence pu- " trefaction is in a greater degree, the serum becomes of a browner " colour. In a still greater degree, it is red; in this case, on examin- " ing the red particles with a microscope, many of them are found di- " minished in size, and not regular spheres, or oblate spheroids; some " have the appearance of being broken in two, and look like half " moons; but most of them retain their healthy appearance. If the " putrefaction goes on still further, there is hardly any distinction be- " tween serum and coagulum; if still further, the coagulable lymph " forms a kind of bag, leaving the serum on the outside distinct. In " the substance of the bag itself there is no intermixture of red parti- " cles, so that it looks like the buff which is on the surface of the coa- " gulum in cases of general inflammation; but within this bag a red " fluid is contained, which upon being examined with a microscope, " shews the red particles of a variety of forms."

alis. But typhus (it was obſerved in the Introduction) often appears in its very worſt forms, unaccompanied by this ſymptom.

Petechiæ occaſion no elevation of the cuticle, ſo that they are ſeen, but not felt. They are red, brown, or blackiſh; the darker the colour, the more they indicate danger. Their ſhape is alſo various; in general they are circular, at other times running into each other they aſſume various forms. They vary from a ſize ſcarcely perceptible to that of a ſhilling, and are ſometimes even larger. Petechiæ generally make their firſt appearance on the neck, breaſt, and back; they more rarely appear on the face and extremities, except on the inſide of the arm, where the ſkin is tender, and about the wriſt. They are ſometimes ſo crowded together, that at a little diſtance the ſkin appears uniformly reddiſh. In other caſes they are thinly ſcattered. For the moſt part they appear before the end of the ſecond week, and are generally, but not univerſally, an unfavourable ſymptom. There are inſtances of the febrile ſymptoms abating on their appearance.

Inſtead of petechiæ the ſkin is ſometimes covered with blotches of a larger ſize, and generally of a purpliſh colour, termed vibices; at other times it is marked with ſtreaks or ſtains of different colours, which ſometime cover almoſt the whole body, particularly the breaſt, and give it the appearance of ſtained marble.

Theſe are ſymptoms which indicate much danger. The danger, however, is not always proportioned to the number of petechiæ or vibices. It is uſually the greater, the earlier they appear. Ramazzini obſerves, that thoſe in whom they appeared on the firſt day, almoſt all died. Petechiæ do not always continue through the whole courſe of the diſeaſe, but ſometimes diſappear in a few days; in other caſes they diſappear for a ſhort time, and return. They have been ob-

ſerved to continue, however, not only during the whole courſe of the diseaſe, but for a conſiderable time after every other ſymptom had diſappeared.*

Petechiæ ſomtimes, though much more rarely, appear in synocha. The reader will find caſes of this kind in Eller de Cognos. et Curand. Morbis, and Dr. Grant's Treatiſe on the Fevers moſt frequent in London.†

Petechiæ and the worſt kinds of hemorrhagies or other ſymptoms denoting extreme debility in the vital and natural functions are generally accompanied with a tendency to gangrene, the ſweat and other ſecretions having a putrid ſmell. Gangrene ſomtimes occurs ſpontaneously. It is then moſt apt to appear on the noſe, lips, cheeks, fingers, and toes. Sometimes it attacks a whole limb, the hands or feet becoming black ;‡ and it has been known to extend as high as the elbow

* Strack de Feb.

† Petechiæ sometimes appear unaccompanied by fever of any kind. For cases of this kind the reader may consult the inaugural Dissertations of Dr. Edward Graaf and Dr. Adair, Dr. Grant's Treatise just alluded to, Dr. Duncan's Medical Facts and Observations, and the last vol. of his Commentaries in which there are four cases of this disease. It is mentioned by various other writers, and is not very uncommon especially among the lower ranks, although it is only of late that it has demanded much of the attention of physicians in this country. I have seen many cases of it in this neighbourhood. It has received a variety of appellations: Petechiæ sine febre, Petechianosos, &c. It belongs to the third order of Dr. Cullen's third class of diseases, the Impetigines. It is often accompanied with a tendency to hemorrhagy in different parts of the body; the disease itself indeed is to be regarded as very nearly allied to hemorrhagy. It has sometimes disappeared with a flow of sweat, lasting for several days, more frequently without any remarkable crisis. In some cases it has proved fatal.

‡ Huxham on Fevers, Frank's Epitome de Curand. Hom. Morb. Vogel de Cog. et Cur. Morb. &c. Vogel particularly notices spontaneous mortification in typhus, and points out the parts of the body most liable to it.

or knee. The extremities thus affected become cold, and often remain in this ſtate for many days before death. In general, however, mortification is not ſpontaneous in typhus, but the conſequence of ſlight injuries, and then it may occur in any part of the body, although it is ſtill moſt apt to appear in the extremities.

I need hardly obſerve, that this tendency to mortification, or in other words to the extinction of the powers of life, affords a very unfavourable prognoſis. Notwithſtanding Dr. Miller, in his account of the diſeaſes moſt prevalent in Great Britain, and ſome others, have maintained that a degree of mortification appearing on the ends of the fingers, is to be regarded as a favourable ſymptom in bad kinds of typhus.*

The patient often groans and ſeems uneaſy, but is unable to explain or point out the ſeat of his uneaſineſs. This is an unfavourable ſymptom, not only indicating a conſiderable degree of ſtupor, but the preſence of an irritation, which cannot fail to increaſe the diſeaſe. It is the buſineſs of the attendants to diſcover the ſource of this irritation, and if poſſible to remove it. It often proceeds from the urine being too long retained, very frequently from excoriations, in consequence of the patient having lain too long in the ſame poſture. This, in caſes where the tendency to mortification is conſiderable, is often attended with very melancholy effects. Inſtances have occured in which, after the danger from the fever is paſt, a mortified ſore on ſome part of the body, on which the patient had lain, is diſcovered, which baffles all the ſucceeding care of his attendants. Accidents of this kind warn us, to have the parts on which the patient reſts examined from time to time, and when any degree of redneſs

* It must be admitted, that in some rare cases the appearance of gangrene has been attended with a favourable change, the fever abating soon after it.

appears, if possible to make him change his posture. When he is so weak that he can lie only on the back, the parts on which he chiefly rests should be defended by proper plaisters. But such in many cases is the proneness to mortification, that no care can prevent it.

Typhus sometimes terminates in ten or twelve days, or within that period; if it be protracted for a longer time, the symptoms usually suffer but little change during a considerable part of the disease. When it is protracted beyond the 14th day, without the more alarming symptoms of debility shewing themselves, the prognosis is generally good.

Dreadful as this fever often is, it may appear in a very mild form. Those who have been exposed to the contagion or other causes of typhus, are sometimes affected with alternate heats and chills, listlessness and debility; yet never become so ill as to be confined to bed; and these symptoms after teizing the patient for days, sometimes weeks, often wholly disappear. Between the worst and mildest forms there are innumerable degrees, which insensibly run into each other.

If the case is about to terminate fatally, the symptoms which have been enumerated denoting extreme debility, gradually shew themselves. Cold viscid sweats at length appear on different parts of the body, or the colliquative diarrhœa, which have been mentioned as a frequent forerunner of death, supervenes; and the patient, reduced to the last stage of weakness, either calmly expires, or is carried off by convulsions.

When the event is about to prove favourable, the state of the patient is sometimes evidently changed for the better in the space of a few hours. After each succeeding remission, the symptoms return with diminished violence, till the fever

is wholly removed, leaving the various functions in a ſtate of debility, from which in general they ſoon recover, and often acquire a greater degree of vigour than they poſſeſſed before the fever.

In many caſes, however, the debility which remains after long protracted fevers is the ſource of fatal diſeaſes, of the various kinds of dropſy, of phthiſis, or any other diſeaſe to which the patient happens from other cauſes to be prediſpoſed. For the circumſtances which usually act as prediſpoſing, often become exciting cauſes in debilitated ſtates of body, however induced.

It is not uncommon for fevers, in which much debility prevails, to be followed by a permanent derangement of ſome of the functions. The patient has been known to remain deaf or blind. More frequently theſe ſenſes are only impaired. The voice alſo is ſometimes ſo much altered, that it never recovers its uſual tone, and in ſome caſes is wholly loſt. It is not uncommon for the judgment to remain impaired, particularly after fevers in which the delirium has been obſtinate. From this melancholy conſequence the patient generally recovers, if he has no hereditary prediſpoſition to it.

When the change to health is ſudden, it is generally attended with ſome of the ſymptoms that have been termed critical. Before leaving the ſymptoms of fever, it will be proper to make a few additional obſervations on theſe.

SECT. III.

Of the Crises of Fevers.

Of the symptoms which attend the more sudden changes from fever to health, the most common is what has been called the critical deposition of the urine.

During continued fever the urine is usually passed in small quantity, is sometimes high-coloured, more frequently pale, and for the most part without much cloud or sediment. As the symptoms abate, it is passed in greater quantity, and generally deposits a more or less copious sediment. This sediment consists either of red crystals, which usually do not appear till several hours after the urine is passed, and fall to the bottom, leaving it limpid; or of a white and sometimes pinky matter, which generally appears sooner, and only falls in part to the bottom, the urine remaining turbid. The latter of these sediments has been termed furfuraceous or branny; the former from its resemblance to brick-dust, lateritious; but the last term has not been used in a very definite sense. Sometimes both take place from the same portion of urine. But when there is much of the one, there is generally little of the other.

These sediments were long regarded as a morbific matter, the cause of the fever, and to the discharge of which its abatement was ascribed. But the truth is, that both sediments are almost constantly met with in greater or less quantity in the urine of people in health.

I had occasion some years ago to make observations on the urine, with a view to determine the modes of life which dispose this fluid to deposit, what its discoverer Scheele calls lithic, now called uric acid, of which the brick coloured sedi-

ment of febrile patients consists.* From these observations it appears, that this sediment is most copious when, from an acescent diet or a debilitated state of the digestive powers, there is much acidity in the primæ viæ, or when the perspiration is checked, in consequence of which, the acid, which ought to have passed by the skin, is thrown upon the kidneys.†

It is farther shewn, that if while the perspiration is checked, the action of the kidneys is also debilitated, the acid causing this deposition from the urine accumulates in the system, and is thrown off by the skin and kidneys when their vigour is restored; and that in proportion as the perspiration is free, the less of this acid passes by urine. Thus the appearance of the lateritious sediment is merely a symptom of returning health, but generally indicating a less free perspiration than natural.

The other, the cream-coloured or furfuraceous sediment, which also now and then assumes more or less of a red or rather a pink colour, but has an appearance very different from the former, was found most copious in the urine of those who used an alkalescent diet, or in whom the perspiration was unusually free, so that any acid received into, or generated in, the body passed chiefly by the skin. Both depositions were most copious when the urine was highest coloured and had the strongest smell, demonstrating that it was much charged with the peculiar substances excreted by the kidneys The same portion of urine, however, as in fevers, never deposited a great deal of both.

* An account of these observations was published in 1792, entitled *An Inquiry into the Remote Cause of Urinary Gravel.*

† It is ascertained by experiment, in the Treatise alluded to, that an acid passes off even by insensible perspiration, and that all acids as far as they were tried, even the carbonic acid gas, occasions the precipitation of uric acid from the urine The circumstance of acids occasioning this precipitation was first noticed in an anonymous publication on the origin of gout and gravel, afterwards claimed and republished by Mr. Murray Forbes.

The latter ſediment, therefore, like the former, is merely a ſymptom of returning health, and particularly indicates the renewal of a free ſecretion by the ſkin, which in fevers is generally a favourable ſymptom.

But whether a favourable ſymptom or not, it is ſtill attended with the ſame depoſition from the urine. In ſome fevers terminating fatally there is an unuſual tendency to ſweat, which only exhauſts the ſtrength. In theſe, this depoſition conſtantly attends, but without removing the fever. This is the caſe in hectic fever. I have obſerved this depoſition in all caſes where there were night ſweats although without fever. Nay I have found on repeated trials, that I could at pleaſure occaſion it in the urine of healthy people, by promoting the perſpiration by ſmall doſes of antimon. tartaris. or pulv. ipecac. comp. Theſe appearances in the urine, therefore, at the favourable termination of fevers, are certainly not the cause, but the conſequence, of recovery.*

Next to the critical depoſition of the urine, there is no ſymptom which ſo generally attends the change from fever to health as ſweating. This we found is almoſt uniformly the

* The following are the only appearances of the urine, if we except those it assumes in consequence of morbid affections of the urinary organs, which can be distinctly marked. The pale urine without cloud or sediment; the pale urine with a light cloud appearing a few hours after it has been passed; the high-coloured urine remaining clear, or having a light cloud formed in it without sediment; the high-coloured urine remaining clear, or having a light cloud formed in it and depositing usually a considerable time (from 4 to 12 hours) after it has been passed a red crystalised sediment; the high-coloured urine becoming turbid after it has been passed for a short time (from half an hour to two hours) and depositing a light-coloured sometimes pinky sediment, now and then (after the urine has stood for a longer time) mixed with more or less, if the light-coloured sediment is copious, never with much, of the red crystalised sediment; and in almost every disease, as well as in health, the urine occasionally assumes all these appearances.

criſis of intermittents, and continued fever ſeldom terminates favourably without ſome degree of moiſture appearing on the ſkin.*

It is ſurpriſing that the beſt effects, even in thoſe fevers in which debility prevails moſt, ſometimes attend profuſe and long continued ſweats, provided they are general, and the patient bears them without much loſs of ſtrength. Dr. Donald Munro remarks, that in the petechial fever the ſweat often continued for three or four days with the beſt effects. Another remarkable peculiarity of this fever (the petechial) ſays Hoffman, is the profuſe cold ſweats, of an acid ſmell, continuing for ſeveral days and nights, and proving a ſalutary criſis.

He juſtly adds, however, that these ſweats, although proving critical, always indicate much debility, and that if the patient's ſtrength be not ſupported while under them, he frequently ſinks when on the brink of recovery.

From theſe facts, however, we are not to draw an inference, which long miſlead phyſicians, and proved a ſource of much miſchief; that the ſolution of the fever is to be wholly attributed to the flow of ſweat, and that could this ſymptom by any means be induced, it would always prove equally beneficial. To this hypotheſis, beſides other erroneous practices, we may trace the employment of the hot regimen in fevers; an error ſo fatal, that it may be ſeriouſly queſtioned, whether the medical art, during its prevalence, did more good or harm in theſe diſeaſes. It has juſt been ſhewn, that the critical ſe-

* The crisis in synocha, says Hoffman, is in most cases a profuse sweat. Dr. Grant remarks of the synochus, "Nor do I find the crisis ever "perfect till the night kindly sweats begin to flow; and Dr. Huxham declares, that he never saw "a malignant typhus cured till more or "less of sweat had issued."

diments in the urine are to be regarded, not as the cauſe, but the conſequence, of recovery. Nearly the ſame may be ſaid of critical ſweats. It favours this opinion that in certain ſymptomatic fevers when the diſeaſe is removed wholly by local means, ſweating, notwithſtanding, often attends the change to health.

Nothing would be more hurtful than checking a ſweat which is attended with relief, and it is even proper, as will be pointed out more particularly in conſidering the treatment of fevers, to uſe innocent means to promote ſweat; but to endeavour to force it out by warmth and heating medicines, is univerſally prejudicial. The wiſhed for criſis is never obtained in this way, and the attempt has often proved fatal.

Even ſpontaneous ſweats are not always to be encouraged. When they continue without relieving the ſymptoms, they indicate danger, and ought to be checked. Nor are thoſe ſweats to be encouraged which are viſcid and partial. Unleſs the ſweat be thin and univerſal, it is ſeldom attended with a remiſſion of the fever.

Sweating not only does not always afford a favourable prognoſis, but is ſometimes among the moſt fatal ſymptoms in fevers. Sweat running copiouſly from the head and neck is a frequent forerunner of death in the yellow fever.* It is of the ſame fever that Dr. Linning obſerves, that the urine often ſhows the critical ſediment on the very firſt day, which he uniformly found a bad ſymptom, and the more copious the ſediment was, the worſe, he obſerves, was the prognoſis.† One of the moſt fatal fevers of which we have any account is the Ephemera Britannica; the chief ſymptom of which was

* See Dr. Jackson's observations on this fever.

† See Dr. Linning's letter to Dr. Whytt, on the yellow fever of South America, in the 2d. vol. of the Essays and Observations, Physical and Literary.

a profuſe flow of ſweat, from which it received the appellation of Sudor Anglicus.*

If we except the critical depoſition from the urine and ſweating, there is no ſymptom which oftener attends the more ſudden changes from fever to health than diarrhœa. If diarrhœa ſupervene on any of the critical days, Haſſenhorl † obſerves, we muſt be careful to do nothing that may check it; and Hoffman remarks, that in his practice he has more frequently obſerved a diarrhœa critical in the petechial fever than either ſweat or hemorrhagy.

In many epidemics there is a peculiar tendency to terminate in this way, and then the diſcharge is generally more or leſs dyſenteric. It is in autumn, the ſeaſon in which dyſenteric affections are apt to appear, that fevers moſt frequently terminate by a diſcharge from the inteſtines.‡

This criſis is often for ſome time preceded by flatulence, gripes, and pains of the loins.

Spontaneous diarrhœa, however, is far from being univerſally favourable. If it does not ſoon bring relief, and particularly if it is attended with much loſs of ſtrength, it ſhould be checked. The diarrhœa, which by medical writers is emphatically termed colliquative, I have already had occaſion to notice.

Vomiting may alſo be enumerated among the criſes of fevers; it never proves critical, however, except at, or very ſoon after, the commencement of the diſeaſe; then, whether ſpontaneous or induced by art, it ſometimes ſtops the fever.

A ſpontaneous flow of blood from different parts of the body, we have ſeen, is frequently attended with an abate-

* See Caius de Ephemera Britannica.

† See his Historia Febris Petechialis.

‡ Quarin De febribus.

ment, or total removal of the ſymptoms of ſynocha ; and, what we ſhould not a priori have expected, ſometimes of thoſe of typhus.

As phyſicians inferred from the critical depoſition of the urine, that fever is owing to the preſence of a morbific matter in the blood, and that this morbific matter muſt be thrown out of the body before the fever could be removed ; and as they inferred from the relief obtained during critical ſweats, that this matter may be thrown off by the ſkin ; ſo they inferred, from the abatement of the ſymptoms which frequently attends hemorrhagies, that it may be expelled from the ſyſtem by veneſection. Nor did the very obvious objection, that although fever be admitted to ariſe from the preſence of morbific matter in the blood, a partial abſtraction of this fluid cannot free the ſyſtem of a matter diffuſed through the whole maſs, prevent them from recommending veneſection in all kinds of fever.

If there be any practice which has been more baneful than the hot regimen, it is the indiſcriminate uſe of blood-letting, in theſe diſeaſes. This ſubject it will ſoon be neceſſary to conſider at length; it is ſufficient here to obſerve that the effects of veneſection and ſpontaneous hemorrhagy in fevers, are often ſo different, that the favourable change, which frequently attends the latter, muſt be atributed to ſomething elſe than the loſs of blood. And as we certainly know that the critical depoſitions of the urine, and have often reaſon to believe that critical ſweats are the conſequence, and not the cauſe, of the favourable change which attends them ; ſo we have reaſon to believe of ſpontaneous hemorrhagy, that it is, at leaſt, in part owing to the general relaxation of the extreme veſſels which takes place in the change from fever to health. The loſs of blood in critical hemorrhagies, indeed, is often too trifling to be ſuppoſed capable of any conſiderable effect.

Of hemorrhagies, that from the nose is most frequently critical. It is generally preceded by some of the following symptoms. An unusual redness of the eyes, sometimes an increased secretion of tears, a sense of weight in the temples, dimness of sight, pain of the head, generally, Quarin observes, of the occiput, itching of the nose, and the *pulsus dicrotus*, regarded by physicians as one of the chief symptoms portending a critical hemorrhagy in fevers. In this state of the pulse, which is also called rebounding, the artery seems at each diastole to give a double stroke to the finger.

Before hemorrhagies in general, the patient usually complains of heat, tension or pain in the part from which the blood is about to flow. The worst species of hemorrhagies which occur in malignant fevers, however, are not preceded by any other symptoms than those of general debility, and never prove critical.

The symptoms which precede critical hemorrhagies seem to oppose the idea of their being the effect of the general relaxation of the vessels; but we know that in all states of the system the above symptoms are generally the consequence of the congestion which precedes the rupture of vessels.

Critical hemorrhagies, it has been observed, are most frequent in those fevers which arise from cold gluttony, the abuse of intoxicating liquors, or suppressed discharges.

Eruptions of various kinds now and then prove critical in fevers; this is sometimes, but not often, the case with the eruptions enumerated in the Introduction as characterising particular species of synochus. Of these eruptions aphthæ most frequently bring relief.*

* "Ad Aphthas," Sydenham observes, "cum jam discessum meditaretur, erat propensior." (See Sydenham De Febribus Continuis).

Aphthæ, however, are far from always being favourable. When light-coloured, and accompanied with a considerable flow of saliva, they are often attended with an abatement of the symptoms. But when there is little flow of saliva, and particularly when the aphthæ are of a dark colour, they are never a favourable, and often a very fatal symptom.

An increased secretion of mucus from the fauces, or of saliva, unattended with aphthæ, is often favourable.* The latter sometimes amounts to a salivation, and has been known to prove critical. Both Sydenham † and Huxham ‡ relate cases of this kind.

A scabby eruption appearing about the mouth or behind the ears, more frequently than any of the preceding eruptions attends the favourable termiuation of fever. §

One of the most remarkable crises of fevers, is a swelling and suppurarion of glandular and other parts of the body. This crisis rarely happens in the synocha. The parotid glands are the parts most commonly affected. They swell and become inflamed, and the event of the fever seems often to depend on the discharge of the matter generated in them.

It has generally been found the most successful practice to

The favourable termination of that species of synochus, which is attended with the miliary eruption, is often preceded by the appearance of aphthæ. (See Mead's Monita et Precepta Medica.

* The former of these is mentioned as having generally been attended with an abatement of the symptoms in the late dreadful fever of Philadelphia.

† See Sydenham de Febribus Continuis.

‡ See Huxham on Fevers. Vogel observes, that intermittents are sometimes cured by a salivation.

§ Rush on the Yellow Fever of Philadelphia, Chisholm on that of Grenada, &c.

lay them open as ſoon as, or even before fluctuation can be perceived in them. "If the diſeaſe," Sir John Pringle obſerves of typhus, "terminates in a ſuppuration of the parotid "glands, one caution only is needful, which is to open the "abſceſs ſoon without waiting for a fluctuation, or even a "ſoftneſs of the tumour, which may never happen. The "pus being here ſo very viſcid, that after it is ripe the part "will feel as hard, as if the ſuppuration had not begun." *

I have heard Sir Walter Farquhar obſerve, that when he attended a regiment on the continent, there appeared among the troops a violent fever accompanied with a ſwelling of the parotid glands, which never came to ſuppuration. Almoſt every patient attacked with this fever died, till it occurred to him that an inciſion of the enlarged gland might prove ſerviceable; from which he found the beſt effects.

"Swellings of the parotid glands," Dr. Donald Munro † obſerves, "appeared in many ſubjects towards the decline of the "fever, which came to ſuppuration and proved critical. In "two only, out of thoſe I attended while in Germany, they "came on early in the fever, but did not ſuppurate; both "patients died. All the reſt recovered, except an old man, "an invalid of Bremen." ‡

Dr. Munro applied poultices and gummous plaſters to the inflamed glands, and as ſoon as the preſence of matter could

* Sir John Pringle's Observations on the Diseases of the Army.

† See Dr. Monro's Treatise on the Diseases of the Army.

‡ Whose case demonstrates in a striking manner the connection between the suppuration of the parotids and the solution of the fever. A swelling appeared on the right side, which came to suppuration and proved critical. The fever in a short time returned; another swelling appeared on the other side, which came also to suppuration, and the fever again ceased. The patient afterwards died hectic, in consequence of the profuse secretion from the sores.

be perceived, he laid them open. The caſes in which the patients died before this happened would ſeem to point out Sir John Pringle's mode of treatment to be preferable. Some epidemics, however, afford a different inference, as appears from the obſervations of Acrel, in the Memoirs of the Royal Academy of Sciences at Stockholm. He often met with abſceſſes in different parts of the body in malignant fevers. At firſt he opened them as ſoon as matter was formed, the conſequences of which were, that the ſtrength ſunk, the fever became worſe, and the patient generally died within eight days.

In ſome caſes, after the fluctuation of the matter is diſtinctly perceived, a purulent diſcharge from the inteſtines, fauces, or noſe ſupervening, the tumors ſubſide, and the fever ceaſes. Phyſicians have endeavoured to promote the termination which nature pointed out, giving gentle laxatives as ſoon as the matter was formed, during the operation of the third of which, it is obſerved, the ſtools were generally mixed with purulent matter, the tumors ſubſided, and the fever disappeared.

The tumors ſometimes appear in the arm-pits, or in the groin, and ſometimes in the teſticle. Dr. Ruſh obſerves, that glandular ſwellings frequently accompany the yellow fever. He never ſaw them come to ſuppuration, but generally found them favourable. Dr. Chisholm, however, remarks, that they were among the unfavourable symptoms of the late dreadful fever of the Weſt Indies, which differed in many reſpects from the common yellow fever, particularly in being accompanied, at leaſt in Grenada, with peſtilential eruptions.

A peculiar affection of the teſticles and ſcrotum ſometimes appeared in this fever, and proved critical.*

* See the 122nd and following pages of Dr. Chisholm's Treatise.

The laſt ſymptom I ſhall mention, as deſerving a place among the criſes of fever, is ſhivering. When this occurs in the progreſs of continued fever, it is ſometimes followed by the hot ſtage, and other ſymptoms of the paroxyſm of an ague, and the fever aſſumes the intermitting form.

Various other ſymptoms are ſaid by authors to be critical in fevers, but moſt of them have been obſerved ſo rarely that their occurrence may rather be regarded as accidental, than as particularly connected with the ſolution of the fever. Suppurations in different parts of the body happening a conſiderable time after its termination, rheumatiſm, catarrhus veſicæ, or common catarrh, occurring about the time the fever goes off, indolent ſwellings, ſchirrus of the different viſcera, various affections of the teeth, jaws, joints, and bones,* ſpaſmodic and other nervous affections, &c.

SECT. IV.

Of the Prognoſis in Continued Fever.

THE prognoſis in continued fever has been delivered in what has been ſaid of the ſymptoms and criſes of this diſease, and of the prognoſis of intermittents.

The danger in fevers ariſes from two cauſes, increaſed excitement, and debility. The ſymptoms of increaſed excitement are leſs to be dreaded than thoſe of debility, becauſe we poſſeſs more certain means of removing them.

* Some of the latter perhaps have a better claim to be regarded as connected with the solution of the fever. See Vogel de Cog. et Cur. Morb.

There is a third head, to which authors refer many of the ſymptoms of typhus, namely putreſcency. "From all this it appears," Dr. Cullen obſerves of the prognoſis in fevers, "that the ſymptoms ſhewing a tendency to death may be diſ-"covered by their being either the ſymptoms

"Of violent reaction;

"Of great debility;

"Or of a ſtrong tendency to putrefaction in the fluids."*

In the 105th paragraph he obſerves, "the ſymptoms de-"noting a putreſcent ſtate of the fluids are,

"1. With reſpect to the ſtomach; the loathing of animal food, nauſea and vomiting, great thirſt, and a deſire of acids.

"2. With reſpect to the fluids; 1. The blood drawn out "of the veins not coagulating as uſual. 2. Hemorrhagy "from different parts, without marks of increaſed impetus. "3. Effuſions under the ſkin or cuticle, forming petechiæ, "maculæ and vibices. 4. Effuſions of a yellow ſerum, under "the cuticle.

"3. With reſpect to the ſtate of the excretions; fetid "breath, frequent looſe and fetid ſtools, high-coloured turbid "urine, fetid ſweats, and the fetor and livid colour of bliſ-"tered places.

"4. The cadaverous ſmell of the whole body."

The firſt ſet of ſymptoms, the loathing of animal food, nauſea and vomiting, thirſt, and a deſire of acids, are common to all kinds of fever, and as ſtrongly marked in ſynocha, in which no putreſcency of the fluids can be ſuſpected, as in typhus.

Of the ſecond ſet of ſymptoms it may be obſerved, that the hemorrhagies and effuſions ſo common in malignant fevers are readily accounted for, and might have been foreſeen from the relaxed ſtate of the ſolids independently of any change

* See Dr. Cullen's First Lines, vol. i. p. 160.

induced on the fluids. We know, however, that in ſuch fevers the blood is thinner and conſequently more apt to be extravaſated than in health, but in a machine ſo complicated as the animal body, may not this change be owing to many other cauſes than putreſcency? Is not the debilitated ſtate of the various functions in typhus, particularly that of the ſecreting organs, ſufficient to account for it? That the blood is in no degree actually putrid, even in the worſt forms of typhus, we are well aſſured. It does not indeed coagulate ſo readily as uſual, but never has any fetor.

It is only at firſt view that the remaining ſymptoms seem to afford a better argument for the opinion of a putreſcency of the fluids.

When the various functions are much impaired, the contents of the ſtomach and alimentary canal ſtagnate. These form no part of the living body. They are as apt to run to fermentation as the ſame matter out of the body expoſed to the ſame degree of heat and moiſture, unleſs the antiſeptic fluids of theſe cavities are ſupplied to check this tendency. Thus it happens, where the powers of life are much exhauſted, that the contents of the intestines become putrid. The ſame happens on the ſurface of the body. The failure of the due ſecretion and abſorption there cauſes a ſtagnation and putrefaction of the natural moiſture. Hence the putrid ſmell of the ſweat. This alſo happens in parts which have been bliſtered, in ulcers, &c. ſo that it is easy to account for the cadaverous ſmell of the body, without ſuppoſing any degree of putrefaction in the circulating fluids. And thoſe labouring under typhus, being more ſubject to gangrene than people in health, only proves, that in them the vital powers are more languid and apt to fail.

It would ſeem, therefore, that the various ſymptoms arranged by authors under the head of putreſcency, come under

that of debility. And in conſidering the treatment of fever, we ſhall find that the means employed with a view to obviate what are called the ſymptoms of putreſcency are only effectual in proportion as they reſtore the impaired vigour.

CHAP. II.

Of the REMOTE CAUSES *of* CONTINUED FEVER.

I HAVE already had occaſion to obſerve that I would not always attempt a diviſion of the remote cauſes into prediſpoſing and exciting: becauſe the ſame cauſes often act in both ways. This is true of the remote cauſes of continued fever. There are two, however, which generally act as exciting cauſes; cold, occaſioning the fevers characteriſed by an increaſe of excitement; and contagion, thoſe in which debility prevails. As the remote cauſes of intermittents were arranged under the head of marſh miasma, I ſhall arrange thoſe of continued fevers under the two heads of cold and contagion; becauſe in conſidering theſe, we ſhall have occaſion to take a view of the various circumſtances which produce, or tend to produce this order of fevers.

SECT. I.

Of Cold as a Cauſe of Fever.

THIS part of the ſubject Dr. Cullen has conſidered fully in his Firſt Lines; and to what he has ſaid, there is little to be added. I ſhall therefore quote his obſervations, omitting ſuch as appear to be hypothetical.

" The operation of cold on a living body is ſo different " in different circumstances as to be of difficult explanation; it " is here, therefore, attempted with ſome diffidence.

" The power of cold may be conſidered as abſolute or " relative.

" The abſolute power is, that by which it can diminish the " temperature of the body to which it is applied. And thus, " if the natural temperature of the human body is, as we ſup- " poſe it to be, that of 98 degrees of Farenheit's thermome- " ter, every degree of temperature leſs than that, may be " conſidered as cold with reſpect to the human body; and in " proportion to its degree will have a tendency to diminiſh the " temperature of the body. But as the living human body " has in itſelf a power of generating heat, ſo it can ſuſtain " its own proper heat to the degree above-mentioned, though " ſurrounded by air, or other bodies of lower temperature " than itſelf; and it appears from obſervation, that in this " climate, air, or other bodies, applied to the living man, do " not diminiſh the temperature of his body, unleſs the tempe- " rature of the bodies applied be below 62 degrees. From " hence it appears that the abſolute cold in this climate does " not act on the living human body, unleſs the cold applied " be below the degree juſt now mentioned.*

" It appears alſo, that the living body being ſurrounded by " air of a lower temperature than itſelf, is neceſſary to its " being retained in its proper temperature of 98 degrees; for " in this climate every temperature of the air above 62 degrees

* There is an evident inaccuracy in this statement, because the velocity with which the temperature of an animal is reduced by the surrounding medium, is not regulated by its temperature only. The temperature of the human body is not diminished by air at the temperature of 62°; but it is diminished by water or quicksilver at the same temperature.

" applied to the human body, though ſtill of a lower tem-
" perature than itſelf, is found to increaſe the heat of it.*
" And from all this it appears, that the abſolute power of
" cold with reſpect to the human body is very different from
" what it is with reſpect to inanimate bodies.

" The relative power of cold, with reſpect to the living
" body, is, that power by which it produces a ſenſation of
" cold in it; and with reſpect to this it is agreeable to
" the general principle of ſenſation, that the ſenſation
" produced is not in proportion to the abſolute force of im-
" preſſion, but according as the new impreſſion is ſtronger
" or weaker than that which had been applied immedi-
" ately before. Accordingly, with reſpect to temperature,
" the ſenſation produced by any degree of this, depends
" upon the temperature to which the body had been im-
" mediately before expoſed; ſo that whatever is higher

* There is also an inaccuracy in this statement. For the increase of temperature in this case is almost wholly confined to the surface. It appears from a variety of experiments, particularly those of Dr. Crawford, Dr. Fordyce, and Mr. Hunter, that the living body resists an increase as well as a diminution of its temperature, and that there is no temperatue to which we can venture to expose it, which will raise internal parts more than a very few degrees above the natural temperature. See an account of Dr. Crawford's experiments in his Treatise on Animal Heat; of those of Dr. Fordyce, Sir C. Blagden, and others, in the LXVth volume of the Philosophical Transactions; and of those of Mr. Hunter, in his work on the Animal Œconomy. Mr. Hunter's experiments, if accurate, are the most conclusive in favour of the living body possessing a peculiar power of resisting an increase of temperature, as in them the result cannot be attributed to the effects of evaporation. Dr. Crawford's experiments prove, that an animal disengages a less quantity of caloric in a high than in a low temperature; but if Mr. Hunter's experiments are accurate, our bodies must possess a power of combining, as well as disengaging, caloric. A temperature above 62°, therefore, may rather be said to exhaust the powers, than increase the temperature of our bodies.

" than this feels warm, and whatever is lower than it feels
" cold; and it will therefore happen that the oppofite fenfa-
" tions of heat and cold, may, on different occafions, arife
" from the fame temperature as marked by the thermome-
" ter."

" With refpect to this, however, it is to be obferved, that
" although every change of temperature gives a fenfation of
" cold or heat as it is lower or higher than the temperature
" applied immediately before, the fenfation is in different cafes
" of different duration. If the temperature at any time ap-
" plied is under 62 degrees,* every increafe of temperature
" applied will give a fenfation of heat; but if the increafe
" of temperature does not arrive to 62 degrees, the fenfation
" produced will not continue long, but be foon changed to a
" fenfation of cold. In like manner, any temperature ap-
" plied to the human body, lower than that of the body it-
" felf, gives a fenfation of cold; but if the temperature ap-
" plied does not go below 62 degrees, the fenfation of cold
" will not continue long, but be foon changed to a fenfation
" of heat." The paragraphs which follow in Dr Cullen's
Firft Lines, refpecting the manner in which cold acts on the
living animal body, are omitted, as not only hypothetical but
in fome parts inconfiftent. In the 92d paragraph Dr. Cullen
enumerates the morbid effects of cold:

" 1. A general inflammatory difpofition of the fyftem,
" which is commonly accompanied with rheumatifm or
" other phlegmafiæ.

" 2. The fame inflammatory difpofition accompanied by
" catarrh.

" 3. A gangrene of particular parts.

" 4. A palfy of a fingle member.

" 5. A fever, or fever properly fo called, which it often

* See note in page 203.

" produces by its own power alone, but more commonly it " is only an exciting cauſe of fever by concurring with the " operation of human or marſh effluvia.

" Cold is often applied to the human body without pro- " ducing any of theſe morbid effects, and it is difficult to de- " termine in what circumſtances it eſpecially operates in pro- " ducing them. It appears to me, that the morbid effects of " cold depend partly upon certain circumſtances of the cold " itſelf, and partly on certain circumſtances of the perſon to " whom it is applied.

" The circumſtances of the cold applied which ſeem to " give it effect are, 1. The intenſity or degree of the cold. 2. " The length of time during which it is applied; 3. The de- " gree of moiſture at the ſame time accompanying it. 4. Its " being applied by a wind or current of air. 5. Its being a " viciſſitude, or ſudden and conſiderable change from heat to " cold.

" The circumſtances of perſons rendering them more lia- " ble to be affected by cold, ſeem to be, 1. The weakneſs of " the ſyſtem, and particularly the lessened vigour of the circu- " lation, occaſioned by faſting, by evacuations, by fatigue, by " a laſt night's debauch, by exceſs in venery, by long watch- " ing, by much ſtudy, by reſt immediately after great exer- " ciſe, by ſleep, and by preceding diſeaſe. 2. The body, or " its parts, being deprived of their accuſtomed coverings. 3. " One part of the body being expoſed to cold, while the reſt " is kept in the uſual or a greater warmth.

" The power of theſe circumſtances is demonſtrated by " the circumſtances enabling perſons to reſiſt cold. These " are, a certain vigour of conſtitution, exerciſe of the body, " the preſence of active paſſions, and the uſe of cordials.

" Beſide theſe, there are other circumſtances which, by a " different operation enable perſons to reſiſt cold, acting as a

" ſenſation; ſuch as paſſions, engaging a cloſe attention to one " object, the uſe of narcotics, and that ſtate of the body in " which ſenſibility is greatly diminiſhed, as in maniacs. To " all which is to be added, the power of habit with reſpect " to thoſe parts of the body to which cold is more conſtantly " applied, which both diminiſhes ſenſibility, and increaſes " the power of the activity generating heat."

When cold acts as the exciting cauſe, the fever is generally of that ſpecies which has been termed ſynocha. It is chiefly when cold concurs with the marſh miaſma or contagion in producing intermitting fever or typhus, that it acts as a prediſpoſing cauſe.

SECT. II.

Of Contagion.

WITHOUT detaining the reader, by remarks on the indefinite manner in which the terms contagion and infection have been employed; it will be ſufficient to define the ſenſe in which I ſhall uſe them.

If it can be proved that the plague, for inſtance, is communicated to a healthy perſon, not only by the ſick themſelves, (in which caſe it is poſſible to aſcribe the ſpreading of the diſeaſe to ſympathy) but alſo by any thing which has been in contact with the ſick, although the perſon infected is ignorant of its having been ſo; if this, I ſay, is an eſtabliſhed fact, it is then aſcertained, that matter of ſome kind paſſes from

the ſick, to the perſon receiving the diſeaſe. This matter I ſhall call contagion; and its action on the perſon in whom it produces the diſeaſe I ſhall call infection.

The following obſervations may be divided into three parts.

In the firſt we ſhall conſider the ſource from which contagious fever ſprings.

In the ſecond, the different ways in which it ſpreads; and

In the laſt, (what depends on a knowledge of theſe) the means of preventing its appearance and checking its progreſs.

There are few parts of medicine involved in greater obſcurity, than the nature of contagion. Univerſal experience only could convince us, that the application of a matter, which for the moſt part cannot be detected, and which is often applied in very ſmall quantity, ſhould ſo conſtantly produce nearly the ſame train of ſymptoms, whatever be the ſtate of the body at the time it is received into it.

Many have attempted to aſcertain the origin of contagious diſeaſes; but ſuch enquiries have for the moſt part proved fruitleſs, and often led to very abſurd opinions.

In the hiſtory of medicine we obſerve contagious diſeaſes which had long prevailed ſuddenly diſappearing, and others ariſing in their ſtead. But the facts preſerved, concerning the production and diſappearance of theſe diſeaſes, throw no light on the ſources from which they aroſe. The leproſy of the Jews, and other ſpecies of leproſy which raged in Europe in the 12th and 13th centuries, are ſcarcely now to be met with. We find Celſus ſpeaking of the hydrophobia as a new diſeaſe; and we have a remarkable inſtance both of the production and diſappearance of a contagious diſeaſe in the Ephemera Britannica, or, as it was termed, the Sudor Anglicus, described by Caius* and others. The gangrenous

* Caius de Ephemera Britannica.

ſore throat, Allionius * obſerves, was ſcarcely known before 1610, ſince which time it has made dreadful havoc in almoſt every country of Europe. The Plica Polonica ſeems to have made its appearance only in the laſt century. The addreſs of the Poliſh phyſicians to the Univerſity of Paris is ſtill extant, in which the diſeaſe is deſcribed as new, extremely contagious, and incurable by any means they could think of. The "yaws," Dr. Ferriar † obſerves, "the ſibbens, and other national in-"fectious diſorders afford ſtrong proofs of the variety of "animal poiſons; and Mr. Hunter in his excellent work on "the Lues, has given good reaſon for believing that new "poiſons are conſtantly produced among the poor of great "cities." From theſe and many ſimilar obſervations, it appears that Dr. Cullen is wrong in attempting to limit contagions to a very few ſpecies.

Concerning the ſource of the above and other contagious diſeaſes, there is but one conjecture which appears at all probable. That each, though afterwards propagated by contagion, is at firſt produced independently of contagion, by a concurrence of cauſes which rarely takes place. And when, at any period, it happens, that no perſon labours under the diſeaſe, it muſt of courſe ceaſe to exiſt; and cannot be reproduced unleſs a ſufficient quantity of the contagion is preſerved in fomites,‡ till the ſame cauſes, which firſt gave riſe to it, again conſpire. Thus contagious diſeaſes may for a long time diſappear, while a different combination of cauſes may give riſe to others, which in like manner ſpread by their peculiar contagions. The probability of this conjecture will be ſtrengthened by what I am about to ſay of typhus.

* Allionius de Miliarium Origine.

† Dr. Ferriar's Medical Observations and Reflections.

‡ Substances impregnated with contagion.

Whatever be the difficulty of tracing the ſource of other contagious diſeaſes, it is no difficult matter to detect that of typhus. The combination of a very few circumſtances, and thoſe of frequent occurrence, is ſufficient to produce this diſeaſe.

It may ariſe in any ill-ventilated and crowded place. Mr. Howel and others, who eſcaped from the black hole of Calcutta, were ſeized with this fever. Thus Dr. Lind aſcribes the production of many contagious fevers on ſhipboard to keeping the hatchway ſhut. Typhus frequently ariſes in hoſpitals, jails, tranſport ſhips, &c. when due attention has not been paid to ventilation. It is evident, therefore, that the effluvia of the living body, become putrid by ſtagnation, are capable of producing it.

Putrid effluvia, from any other ſource, may have the ſame effect. Thus uncleanlineſs of all kinds is favourable to the production of this diſeaſe; and on this account ſuch fevers generally take their riſe among the poor, and among them are moſt fatal.*

The confinement of the putrid effluvia is not always neceſſary for the production of typhus. When the cauſe is ſufficiently powerful, the whole air of a neighbourhood may be ſo loaded as to be capable of producing it. Senac gives an account of a malignant fever occaſioned by the offal of a city being accumulated without the walls.† It often happens that

* See the observations of Sir J. Pringle, Dr. Ferriar, &c. It is observed, by Dr. Fordyce and others, that many brute animals are subject to typhus, when crowded together in ill-ventilated places. This fever has been observed to break out among hogs, and more frequently among sheep.

† The air was so loaded with putrid effluvia, that those who lived near the heap of putrifying matter could not keep meat sweet for three hours.

typhus ſpreads itſelf over the adjacent country, when the dead are left unburied on the field of battle. And Foreſtus mentions a fever of the ſame kind, which raged at Egmont, in North Holland, occaſioned by a whale left on the ſhore.

The putrid effluvia of animal and vegetable ſubſtances produce continued fever when the ſituation and air are dry, and intermittents when they are damp.*

Such is the principal ſource of typhus; but in the cauſes of every ſpecies of fever we find a ſource of this; for from whatever cauſe fever ariſes, and whatever appearance it at firſt aſſumes, it may by various accidents be protracted, and become a contagious typhus.

It is ſaid, that typhus has been found more apt to ariſe among people who live much on animal food, particularly if ſalted, than among thoſe who uſe a large proportion of freſh vegetables. It is leaſt apt to ariſe when the diet is ſuch as beſt preſerves the vigour of the ſyſtem; and this diet is different in different circumſtances. Peculiarity of conſtitution and habit influence it much. I ſhall preſently have occaſion to point out the ſtates of body which prediſpoſe to, or tend to prevent, infection.

It has been a favourite opinion, that certain ſtates of the air, independently of the circumſtances which have been pointed out as the ſources of typhus, often produce this, as well as other contagious fevers. This induced Sydenham to mark attentively the ſtate of the weather, in different years, during which epidemics of different kinds prevailed. But after very careful obſervation he was obliged to confeſs that he could perceive no difference in ſeaſons in which the contagious diſeaſes were very different.

* Compare what is here said with what was said of the remote causes of intermitting fever, B. i, c. iii.

Van Swieten made a ſimilar ſet of obſervations, which led him to the ſame concluſion. He noted for ten ſucceſſive years, three times a day, the height of the barometer and thermometer, and the direction and ſtrength of the wind. He alſo marked the quantity of rain that fell, the various changes of the air, diſeaſes, number of the ſick, and of thoſe who died. Theſe obſervations, like thoſe made by every perſon in the courſe of his own experience, prove, that certain diſeaſes, pleuriſies, quinſies, &c. are moſt frequent in certain kinds of weather; but they throw no light on the ſource of contagious diſeaſes.

Of the Ways in which Typhus ſpreads.

In whatever manner typhus is produced, it is generally * propagated by contagion.

There are three ways in which a contagious diſeaſe may ſpread:

1. By actual contact.
2. Through the medium of the air.
3. By means of ſubſtances which have been in contact with, or near the ſick.

Concerning the firſt of theſe, little need be ſaid. It is probable, that the larger the ſurface which has been in con-

* It is remarkable indeed, that we sometimes meet with malignant fevers, which do not appear to be at all contagious. "Sometimes," Dr. Lind obſerves, "one man may be seized with the petechial, or "with the yellow fever, while the rest continue unaffected." Dr. Lind gives several instances in support of this observation.

tact with the ſick, and the longer it has been ſo, the leſs will be the chance of eſcaping infection. Of the other ways in which contagious diſeaſes ſpread, it will be neceſſary to ſpeak at greater length.

The air is the medium through which contagion in moſt inſtances perhaps is applied to the body; It is common for people to be infected in conſequence of approaching the ſick, without touching them or any thing which has been in contact with them.

It appears, from a variety of obſervations, however, that the contagious atmoſphere, that is, the air ſufficiently impregnated with the contagion to produce the diſeaſe, extends only for a ſhort diſtance around the ſick, not only in typhus, but in all other contagious diſeaſes; certainly not above a few yards, probably not above a few feet.

Contagion, however, may be conveyed from place to place by the wind, and thus the diſeaſe may be communicated at a conſiderable diſtance. In proof of this, many facts might be adduced; one of the moſt ſtriking on record happened on the 11th of May, 1750, at the Old Bailey. The priſoners were kept for nearly a whole day in ſmall, ill-ventilated, and crowded apartments; ſome of them laboured under the jail fever. When they were brought into court, the windows at the end of the hall, oppoſite to the place where the judges ſat, were thrown open; the people on the left of the court, on whom the wind blew, were infected with the fever, while thoſe on the oppoſite ſide eſcaped. The lord chief juſtice and the recorder, who ſat on the lord mayor's right hand, eſcaped; while the lord mayor and the reſt of the bench who ſat on his left, were ſeized with the diſtemper. Many of the Middleſex jury, on the left ſide of the

court died of it, while the London jury, who ſat oppoſite to them, received no injury.*

Some maintain, that we may often detect the preſence of contagion in the air; that it may be perceived by the ſight or ſmell. There ſeems to be no proof of this opinion, and much of what has been ſaid of it muſt be aſcribed to the effects of imagination. To this at leaſt may be attributed what has been ſaid of a miſt ſurrounding thoſe who labour under the worſt kinds of fever, and of a cloud hanging over a city where ſuch diſorders rage. Caius obſerves of the Sudor Anglicus, that a diſagreeable ſmell preceded the diſtemper, and a black cloud was ſeen to move from place to place as if driven by the wind, the diſtemper following the courſe of the cloud. Concerning the accuracy of obſervations, which ſo many have had the ſame opportunity of making, and ſo few have made, there muſt be much doubt.

The ſmell of patients labouring under fever, ſeems from a variety of facts, to depend on ſomething diſtinct from the contagion. Fomites may be highly impregnated with contagion without having any particular ſmell; where the ſmell of the patient is ſtrongeſt the contagion is often weakeſt, and vice verſa. Upon the whole we have reaſon to conclude, with Dr. Fordyce, that the preſence of contagion in the air is not to be detected by any of the ſenſes.

It is remarked above, that there is no particular ſtate of the weather, which, independently of the circumſtances

* We may thus explain why contagious diseases have sometimes appeared to be most malignant in calm weather, the wind being a principal means of preventing the accumulation of the contagion. It is said, that during a plague at Vienna, the wind did not blow for three months; at the end of this time a breeze arose, by which the distemper was alleviated. See Van Swieten's Comment. in Aph. Boerhaavii.

pointed out as the ſources of typhus, are capable of producing this fever. It has been obſerved, however, that while contagious diſtempers rage, certain ſtates of the air are more or leſs favourable to their progreſs. Calm weather, we have juſt ſeen, often appears favourable to it. The plague has been found to ſpread more rapidly in damp foggy, than in clear dry, weather. Dr. Lind obſerves of typhus, that a damp air ſeems to increaſe the ſtrength of its contagion; Dr. Smith makes a ſimilar obſervation. This has been aſcribed to the contagion being diffuſed through the air with greater difficulty when loaded with watery vapour. It is more probably owing to the ſickly ſtate of body which a damp air induces; it checks the perſpiration, diſorders the ſtomach, and often renews febrile and other diſeaſes.*

It is generally ſuppoſed, that hot weather is favourable, and cold weather unfavourable, to the ſpreading of contagious diſeaſes; and this, with ſome exceptions, is true. It is common for contagious diſeaſes to ſuffer a check, or ceaſe altogether, when the winter ſets in. But the worſt fevers have often raged at the coldeſt ſeaſons. The plague did ſo in London, and there have been inſtances of the plague ſuffering a check as the weather grew warmer.

There ſeem to be particular ſtates of the air, not to be diſtinguiſhed by the ſenſes, which are favourable to the ſpreading of contagious diseaſes. It appears, from the obſervations of Dr. Linning on the yellow fever of North America, that although this fever infects readily the inhabitants of a town where it rages, and particularly thoſe lately come from the country, yet if the ſick retire to the country, they do not communicate the fever. Dr. Lind mentions a fact, for which it is ſtill more difficult to account, that the ſame fever brought to

* See the obſervations on the ſtates of body which diſpoſe to infection, towards the end of this ſection.

this country in ſeveral American ſhips, attacked thoſe only who had been on board the ſhips, others remaining uninfected, notwithſtanding the freeſt intercourſe with the ſick on ſhore.

The ſtools, it has been obſerved, eſpecially if unuſually fetid, are moſt apt to communicate the contagion to the air; next to theſe, the patient's breath; and then the effluvia from his body.

The laſt of the ways in a which contagious diſeaſe may ſpread, is by *fomites*, ſubſtances impregnated with the contagion. Fomites often retain contagion for a great length of time, and may convey it to any diſtance. It is a general opinion, that fomites more readily communicate the diſeaſe, and communicate it in a worſe form than the ſick themſelves.*

Contagion adheres to the furniture and utenſils employed about the ſick, as well as to all kinds of clothes, woollen, cotton, linen, &c. and even lurks in the walls of the apartments where the ſick have lain. Woollen materials and wood are thought moſt apt to retain it.

* "It appears to me probable," Dr. Cullen obſerves, "that contagions as they arise from fomites are more powerful, than as they "arise immediately from the human body." In the obſervations of Sir John Pringle and others, we find striking instances of the virulence of infection from fomites. Dr. Lind remarks, "I am convinced, from "very extensive experience, that the body of the sick is not so apt to "communicate the infection, as the dirty linen, &c. which has been "about him." The sick, Dr. Smith obſerves, and even the dissection of those who died, were not so apt to communicate the disease, as substances which had been in contact with them. It is even said, that contagion may be conveyed in the smoke arising from fomites while burning. Dr. Mead makes this obſervation with respect to the contagion both of small-pox and typhus. See Mead's Monita et Præcepta Medica. The same obſervation is also made by Van Swieten and others.

It is a curious and wholly unaccountable fact, that contagious diſeaſes generally run a certain courſe notwithſtanding all the means which can be employed to check their progreſs, and after this ceaſe ſpontaneoutly, while the walls of the houſes furniture, &c. muſt ſtill be ſuppoſed to be highly impregnated with the contagion. This obſervation is made by Ruſſel and others of the plague, and has been made, indeed, of all contagious diſeaſes.

Thoſe who have been near the ſick may infect others without being infected themſelves. Nay, thoſe who have only been expoſed to putrid effluvia may excite typhus in others, while they themſelves eſcape. "The moſt pernicious infec-" tion next to the plague," Lord Bacon obſerves, "is the " ſmell of the jail, where the priſoners have been long, and " cloſe, and naſtily kept, whereof we had in our time ex-" perience, twice or thrice, when both the judges who ſat " upon the jail, and numbers of thoſe who attended the " buſineſs, ſickened upon it and died, therefore it were good " wiſdom, that in ſuch caſes the jail were aired before they " be brought forth. It is probable," Sir John Pringle obſerves, after quoting this paſſage, "that one of the times " hinted at, by this noble author, was at the fatal aſſizes held " in the year 1577, of which we have a more particular " account in Stow's Chronicle, in theſe words. On the 4th, " 5th, and 6th days of July, were the aſſizes held at Oxon, " where was arraigned and condemned Rowland Jenkins for " a ſeditious tongue, at which time there aroſe amidſt the " people ſuch a damp (an expreſſion in the language of thoſe " days ſignifying bad air) that almoſt all were ſmothered, very " few eſcaped that were not taken, here died in Oxon 300 " perſons, and ſickened there, but died in other places 200 and " odd."

The greater the debility, and the more ſtrongly marked thoſe ſymptoms which have been called putreſcent, petechiæ, fetor of the breath, and perſpiration, &c. the more contagious in general is the fever. This, however, is far from being an univerſal rule; the milder forms of typhus are ſometimes as contagious as the more malignant.

The time during which the contagion lies in the body before it excites the diſeaſe, is different in different caſes. Sometimes its effects are almoſt immediate; in general, however, the infected feel no ſympton of the diſeaſe for one, two, three, or more days, and in ſome caſes, though much more rarely, even for weeks after.

It ſometimes happens, that when thoſe employed about patients labouring under contagious diſeaſes are ſuddenly taken ill, the illneſs proves to be different from that under which the ſick labour. People have, for inſtance, on approaching thoſe ill of the ſmall-pox, been ſuddenly attacked with ſickneſs, head-ach, pain in various parts of the body, and other febrile ſymptoms, which have gone off without ſhewing any of the ſymptoms peculiar to ſmall-pox.* Dr. Chiſholm obſerves, that thoſe expoſed to the contagion of the fever of Grenada, were often immediately ſeized with nauſea and ſlight rigours, which always proved tranſitory, the fever not appearing till the 2d or 3d day, or perhaps not appearing at all.

Similar to theſe obſervations are thoſe of Sydenham and Ruſh, reſpecting the meaſles. What Sydenham calls the morbillous fever, and Ruſh the internal meaſles, are diſeaſes in certain reſpects reſembling, in others differing from, meaſles; but which frequently attacked thoſe, who were expoſed to the contagion of meaſles. Ruſh alſo obſerves, that he frequently met with a ſlight feveriſh diſeaſe, which thoſe who for-

* Cases of this kind are mentioned by Dr. Lind and others.

merly had had the meaſles were ſubject to, on approaching patients labouring under this diſeaſe.

It is not only true, that many expoſed to the action of contagion eſcape infection, but it appears from a variety of obſervations, that many eſcape infection who have actually received the contagion of typhus into the ſyſtem, or have it lurking about them for a conſiderable time, in ſuch a manner that it may readily be called into action by ſlight cauſes. This is ſufficiently confirmed by the obſervations of Dr. Lind in his Treatiſe on Fevers and Infections. He found that thoſe who had been but ſlightly expoſed to the contagion often eſcaped the diſeaſe, if not ſoon after ſubjected to the action of debilitating cauſes; and many recovering from contagious fevers, their bodies not yet being free from the contagion, had the fever renewed by ſuch cauſes. He remarks, that ſailors, after they have been for ſometime on ſhore, are frequently ſeized with fever, which at firſt ſeems merely the effect of a debauch, or ſome ſuch cauſe, but which ſoon aſſumes the preciſe form of that which raged in the ſhip they had left. In ſuch caſes we find contagion acting merely as the prediſpoſing cauſe. Theſe obſervations are illuſtrated by what is ſaid by other writers, particularly by what Dr. Ruſh ſays of his own ſituation while the yellow fever raged at Philadelphia.

In ſpeaking of the means of preventing the progress of contagious diſeaſes, I ſhall have occaſion to mention circumſtances favourable to, or tending to prevent, their ſpreading, which to ſave needleſs repetition I omit at preſent; particularly thoſe ſtates of body which are favourable to, or tend to prevent, infection. It is remarkable, that although typhus, as has been obſerved, ſometimes ariſes among brute animals, in the ſame way as among men, and is communicated from one to another in the ſame manner, yet brutes cannot com-

municate it to men, nor men to brutes;* nor can one ſpecies of brute communicate it to another. Hogs, for inſtance, cannot communicate typhus to ſheep, nor vice verſa. It is remarkable, that white people cannot communicate certain contagious fevers to blacks. And I have been informed by Weſt Indians, that there are among the negroes many contagious febrile diſeaſes, to which white people are not ſubject.

The means of preventing the Generation, and checking the Progreſs of Typhus.

With regard to the means of preventing the generation of typhus, all that is neceſſary to be known was delivered in ſpeaking of the ſources of its contagion. If theſe are avoided, its generation will be prevented. It will be neceſſary to ſpeak at greater length of the means to be employed for checking its progreſs.

On what has been ſaid of the different ways in which contagious diſeaſes ſpread, are founded many of the precautions employed for checking their progreſs. It is obvious, that the firſt of theſe, actual contact with the ſick, is to be avoided. The means ſuggeſted, by our knowledge of the air being a medium through which contagion ſpreads, are more various.

As the contagious atmoſphere extends only for a ſhort diſ-

* Illud præterea notabile est (Waldschmidt obſerves) venenum peſtilentiale, hominibus infestum, non nocere brutis; et e contrario brutorum peſtem non nocere hominibus. See Haller's Disput. ad Morb. Hist. et Cur. pertinentes, vol. v. There are instances, however, of human contagion proving fatal to brute animals. Bocacce says, he saw two hogs eat some peices of bread thrown from a poor man's house, who had died of the plague, in consequence of which they were seized with convulsions and expired in an hour.

tance round the patient, a principal means of avoiding infection is not to approach the ſick. But as contagion is carried from place to place by the wind, and as every place where the ſick have been, even for a ſhort time, may be ſuppoſed to be more or leſs impregnated with it, it muſt frequently happen, in cloſe, and crowded parts of cities, when the number of ſick is great, that the whole atmoſphere will become more or leſs loaded with contagion. And it is difficult for thoſe who inhabit ſuch places to eſcape infection. It is prudent, therefore, on the breaking out of peſtilential diſtempers, to remove to the leſs populous parts of the city. Europeans reſiding at Aleppo, and other places frequently viſited by the plague, chooſe the ſuburbs for their reſidence. By this means, and by ſhutting themſelves up in their houſes, and avoiding all intercourſe with their neighbours, while the diſeaſe rages, they rarely ſuffer from it. Even the inhabitants of colleges and monaſteries in theſe countries, who live in a great meaſure ſecluded from intercourſe with their neighbours, frequently eſcape infection.

For thoſe, however, who are obliged to remain in crowded parts of the city, where the deaths are numerous, it is proper to uſe ſome further precautions.

Contagion ſufficiently diffuſed becomes inert; were not this the caſe, the very purifying of goods impregnated with it, (which is generally done by exposing them to the air) would be ſufficient to ſpread the diſeaſe on all ſides Whether it is owing to this circumſtance, or the ſpecific gravity of contagion, it has been obſerved, that thoſe who reſide in the upper parts of houſes often eſcape, while thoſe living on the ground floor are attacked with, peſtilential fevers.

The greater purity of the air at some diſtance above the ſurface, in places where theſe fevers rage, has been ſo thoroughly aſcertained, in eaſtern countries, that thoſe who ſhut

up (as it is termed) during the plague, converſe with their neighbours from high windows, or if thoſe who live next them are alſo cut off from intercourſe with the infected, the families meet on the houſe top, without dreading the fever which rages below. Dr. Ruſſel * was accuſtomed to preſcribe for a croud of patients in the plague who daily aſſembled under his window, and by whom the air to a certain height muſt have been ſtrongly impregnated with contagion; yet he neither received the diſeaſe himſelf, nor communicated it to thoſe he lived with.

It ſhould be the endeavour, therefore, of thoſe who live where the deaths are numerous, to be ſupplied with air from the tops of their houſes. In thoſe countries where moſt rooms have chimnies, a very ſimple expedient is ſufficient for this purpoſe, and will at the ſame time promote a free circulation of air in the houſe. If fires be kindled in ſeveral of the apartments, as the air of the houſe aſcends through the heated chimnies, the doors and windows being kept cloſe, the external air can enter only by the chimnies which have not been heated. By ſimilar means miners often procure a current of freſh air, when they work at a conſiderable depth under ground.

A free ventilation is generally kept up in the wards of hoſpitals, by kindling fires at the ends of the wards and throwing open the upper parts of the windows. It appears, however, that theſe means are leſs effectual than at firſt ſight they appear to be. Maret obſerves, in the Memoires de Dijon for 1788, that in a ward, where the hoſpital fever raged, he found from ſeveral experiments, that the air towards the cieling, on a level with the open windows, was pure enough to preſerve the life of birds; while in the lower parts of the

* See Russel on the Plague.

ſame ward, on a level with the patients' beds, they ſickened and died. This fact tends to confirm the obſervation juſt made reſpecting the ſpecific gravity of contagion; and ſhews the neceſſity of ventilating the wards of hoſpitals, where contagious fevers rage, by openings near the floor as well as the cieling; and it is probable, that the former of theſe modes of ventilation will be found the moſt effectual.

The knowledge of the air being a medium through which contagious diſeaſes ſpread, has ſuggeſted another ſet of means, whoſe object is to deſtroy, or correct the noxious properties of, the contagion, while ſuſpended in the air.

It is neceſſary, however, to premiſe that it is impoſſible in every inſtance to diſcover whether theſe means operate by deſtroying, or correcting the properties of the contagion; or merely by fortifying the body againſt its action. Many of them may be ſuppoſed to act in both ways. I ſhall arrange under the preſent head, thoſe which may be ſuppoſed to act in the former way; and under another diviſion, point out the means which act evidently by fortifying the body againſt the effects of the contagion. There can be no objection to this mode of arrangement, if the hint here ſuggeſted be kept in view.

We may determine whether any particular means poſſeſs the power of deſtroying or correcting the properties of contagion, by obſerving whether they are capable of purifying fomites. What means have, in this way, been proved to poſſeſs that power will be pointed out in ſpeaking of the purification of fomites.

Heat is one of the moſt ancient means employed for deſtroying or correcting the properties of contagion ſuſpended in the air. It has been an opinion ſince the days of Hippocrates, that by expoſing air impregnated with contagion to the action of fire, the contagion is as it were burned out of it.

And it will appear, when we confider the means employed for purifying fomites, that this opinion is probably true. But how fhall we apply the temperature fufficient for this purpofe, which we fhall find is very confiderable, to the infected air? Fires have frequently been made in the ftreets throughout a whole city, where the plague or other peftilential fevers raged. From this, however, we fhould not, a priori, expect much benefit; and the fact is, it has not been attended with any good effect.*

It even appears, upon the whole, that fires employed in this way, by overheating the atmofphere are often hurtful. Dr. Rufh obferves, that bakers, hatters, and blackfmiths, are more liable than others to contagious difeafes. Thus it was perhaps that when fires had been kept burning for three days in London, while the plague raged there, on the night which fucceeded thefe days no lefs than 4000 died, although not more than 12000 had been deftroyed during the preceding three or four weeks.

It appears, I think, upon the whole, that there are only two ways in which heat proves ufeful in checking the progrefs of contagion, by fupporting a free circulation of air, in fome fuch way as that above pointed out, and by deftroying,

* In the year 1721, the plague raged at Toulon with such violence, that in the space of 10 months it destroyed about two thirds of its inhabitants. Many having insisted on fires being made in different parts of the city, the public records were consulted, and it was there found that on a similar occasion the same means had been tried without success. This, however, did not prevent the inhabitants from repeating the experiment. Wood was therefore laid before every house, and at the sound of a bell all the fires were lighted, by which the city was involved in a thick smoke for nearly a whole day. The plague, however, suffered no abatement. The same measure was had recourse to both at Marseilles and London, when the plague raged in these cities, with no better success.

or correcting the properties of contagion lurking in fomites. The manner in which it is employed for this purpofe we fhall prefently have occafion to confider. Some have fuppofed, that it is of fervice in contagious difeafes, by drying the air in damp fituations.

Various fubftances are fuppofed, while burning, to poffefs a peculiar power of deftroying or correcting the properties of contagion, independently of the heat which attends their ufe. Moft of thefe, however, being employed for the purpofe of purifying fomites, as well as the contagious atmofphere, will be confidered with more propriety under the next divifion. The firing of gunpowder is chiefly employed with a view to purify the latter, and is frequently ufed in hofpitals, on fhipboard, &c. How it acts has not been certainly afcertained; the agitation of the air, occafioned by the fudden explofion, muft diffufe the contagion through a larger tract of air, and may thus render it milder, and its properties, as fome have fufpected, may be corrected by the elaftic fluid difengaged during the conflagration of gunpowder.

It has long been thought, that the carbonic acid gas tends to correct the properties of contagion; and the opinion feems to derive fome fupport from its having been obferved, that in fouthern climates peftilential fevers generally fuffer a check during the vintage, which has been afcribed to the gas evolved from the fermenting vats. However this may be, there are many other circumftances during the vintage, which tend to this effect. The frefh fruits, the approach of the cold feafon, and the general cheerfulnefs which harveft infpires.

A variety of ftrong fmelling fubftances are fuppofed to correct the properties of contagion, without the affiftance of heat. This quality is commonly afcribed to the odour of pitch and tar. When the plague raged in London, few of

thoſe employed about the ſhipping, it is ſaid, were ſeized with it. We are alſo informed, that thoſe who work in ſtorehouſes of ſpices are leſs liable to contagious diſorders than others. One of the moſt celebrated of this claſs of ſubſtances is juniper.* There are none of them, however, on which much dependance can be placed. Camphire, ſo generally uſed as a preſervative from infection, is ſuppoſed to act rather by fortifying againſt contagion, than by correcting its properties.

The ſteam of water has been recommended for purifying the air in jails and hoſpitals, and is probably more effectual.† Many have thought, that large tubs filled with cold water, with freſh willow and other boughs thrown into it, and placed in the apartment of the ſick, eſpecially in ſummer, are erviceable.

But of all the means belonging to this head, the fumes of mineral acids ſeem, from various trials, to be by far the moſt effectual. The muriatic and nitrous acids appear to poſſeſs equal power. The latter is preferable, as it is breathed with leaſt inconvenience. In Dr. Carmichael Smith's Treatiſe on the Effect of the Nitrous Vapour in preventing and deſtroying Contagion, aſcertained by a variety of trials, made chiefly by Surgeons of his Majeſty's Navy, &c. and in the Report of the Council of Health on purifying the Air in the Military Hoſpitals of the French Republic, the reader will find ample proofs of the efficacy of the acids, and an account of the beſt mode of uſing them.‡

* Dr. Monro's Treatise on Inoculation.

† See Considerations on Contagion in Maidstone Jail by Mr. Day; and Dr. Alderson's Essay on Contagion.

‡ Some dispute exists respecting the person to whom we are indebted for the first proposal of using the acids in this way. Those

The means of preventing infection through the medium of ſubſtances, which have been in contact with, or near, the ſick, (for fomites may receive the contagion from the air) equally demand attention.

It was once a cuſtom to deſtroy the apparel, and other ſubſtances, which had been in contact with the ſick; and, if the diſeaſe was of a highly contagious nature, even to pull down their houſes.

The total deſtruction of clothes, furniture, &c. however, being expenſive, various means have been propoſed, and practiſed with ſucceſs to purify infected goods. It is unneceſſary to give a detail of all the means which have been employed with this view. I ſhall point out thoſe which have been found moſt ſucceſsful.

The moſt ſimple means of purifying houſes and goods, is waſhing and expoſing them to the air, and theſe are generally ſufficient. It is common to waſh, or what is better, white-waſh the walls of houſes, where the ſick have lain; and to procure a free circulation of air by opening the windows, and making fires in the houſe. The clothes, and other articles which have been in contact with the ſick, are waſhed and expoſed to the air for a conſiderable time. And in the different lazzarettos of Europe, expoſure to the air, for a certain length of time, is generally thought ſufficient to purify merchandize, even from cities where the plague rages.

Waſhing ſeems to be a leſs powerful means of purification than expoſure to air; and thoſe employed in waſhing fomites run the riſk of infection. Dr. Lind particularly cautions againſt waſhing clothes, impregnated with contagion, in warm

who wish to enter on the merits of the dispute may consult the Publications of Dr. C. Smith, and Dr. J. Johnstone of Birmingham on this subject. The latter supports the claim of his father, the late Dr. Johnstone, of Worcester, author of several ingenious Essays.

water, as the ſteam is dangerous, unleſs they have been ſteeped for ſome time in water, or ſoap lees. The ſame author obſerves, that the air around fomites is ſometimes ſo impregnated with contagion, that it is capable of communicating the diſeaſe.

Fomites, highly impregnated, ſhould be fumigated before they are expoſed to the air, both on account of this circumſtance, and becauſe the purification of ſubſtances highly impregnated with contagion, eſpecially ſuch as have been in contact with the ſick, ought not to be truſted to expoſure to air alone.

Fumigation has been performed in various ways, and with a great variety of materials. The moſt ſimple way is ſmoking with coals or wood; the latter is preferred by Dr. Lind, and ſome think charcoal preferable to either. The articles to be purified being incloſed in a convenient place, fires are kindled, and the ſmoke and heat confined, which are thus applied to the fomites for a conſiderable time. If a houſe or ſhip is to be purified, the windows and other openings are cloſed, and fires kindled within.

Much of the good effects of ſmoking in this way ſeems to depend on the temperature, which, it is ſaid, ſhould be but little inferior to that for baking bread. And this degree ſeems capable of deſtroying contagion in every thing which can be expoſed to its action for a ſufficient length of time. Dr. Lind ſays he never knew an inſtance in which a ſhip, after being ſmoked, did not become quite healthy.

But in order to make the purification as complete as poſſible, different articles have been added to the fire. The chief of theſe are yellow and white arſenic and ſulphur. The laſt has been known as an antidote againſt infection ſince the infancy of medicine. In the ſame manner, tar, pitch, roſin, frankincenſe, camphire, caſcarilla, various ſpices and aromatics,

juniper, pine-tops and ſhavings, turpentine, &c. have occaſionally been uſed.

But we are often obliged to purify a houſe or ſhip, when, from various circumſtances, the patients are prevented from leaving it. It is then of courſe neceſſary to avoid the uſe of ſulphur, arſenic, and other pernicious articles, to employ a leſs degree of heat not too much to diminiſh the oxygenous part of the air; and in particular to avoid the uſe of charcoal. The purification, on theſe accounts, was much leſs perfect than when the inhabitants could be removed. Sometimes, caſcarilla and other aromatics were merely burned at the patient's bed-ſide. All theſe means are now ſuperſeded by the employment of the vapour of the nitrous or muriatic acids, unleſs the infected goods are of ſuch a nature as to be injured by it.

It is to be obſerved, under this head, that there ſhould be as little furniture as poſſible in the bed-rooms of the ſick. It is an obſervation of Dr. Ruſh, which has not been ſufficiently attended to, that every thing around a patient being charged with the contagion, not only renders thoſe about him more liable to infection, but increaſes the virulence of his diſeaſe. To this circumſtance we muſt in part attribute the benefit derived from removing thoſe labouring under contagious diſeaſes to freſh apartments.

Wood and woollen materials, as obſerved above, ſeem particularly apt to retain contagion, and ſhould therefore be uſed by the ſick as little as poſſible. The bedſteads in hoſpitals ſhould be of iron; and Howard adviſes the floors to be laid with bricks.

Certain ſtates of body have been obſerved to be more favourable to infection than others. When the body is vigorous, and the mind undiſturbed, we are leaſt liable to in-

fection. Whatever debilitates and relaxes is favourable to it. Thefe obfervations point out moft of the means to be employed, and moft of the circumftances to be avoided, by thofe who are expofed to contagion.

The moft effectual means of preventing infection is a generous, but temperate diet, and regular exercife. Wine has been long celebrated as a preventive; and it is, upon the whole, the beft. This can only be faid, however, of the moderate ufe of it. The body is at no time more liable to infection than after intoxication, of which there is fufficient proof in the obfervations of many of the authors whom I have had occafion to mention. If, however, when the debility fubfequent to a debauch in wine commences, it be driven off by again having recourfe to wine, the tendency to infection is prevented. Thus it has frequently been obferved, that habitual drunkards efcape contagious difeafes.

Diftilled fpirits are more apt to be followed by debility, and ftrengthen the body lefs than wine. On thefe accounts they are lefs powerful in preferving againft infection.

Opium and tobacco feem to act in the fame way, but are inferior to wine. Tobacco,* whether ufed as fnuff, fmoked, or chewed, has long been a celebrated preventive. Chewing tobacco, in the prefence of the fick, has the additional advantage of reminding us not to fwallow the faliva, which, in a contagious atmofphere, is believed to be dangerous. It would be difficult to prove, that any advantage is derived from an attention to this circumftance; yet as it is not improbable, from feveral facts which I fhall prefently have occafion to mention, that the firft attack of contagion is fometimes on the ftomach, a precaution fo eafy fhould not be neglected. For fimilar reafons we are advifed to ftand with the back towards the patient.

* See Van Swieten's Comment. in Aph. Boerhaavii.

To this head belong thoſe remedies which have been termed tonics. The Peruvian bark, when it neither oppreſſes the ſtomach nor otherwiſe deranges the ſyſtem, may be ranked next to wine, and ſhould be uſed along with it when the danger is great. Pure bitters are alſo uſed, but their effects are more doubtful. To theſe might be added, a great variety of articles of leſs note, moſt of which do not deſerve to be mentioned. Vinegar is uſed in various ways; frequently waſhing the mouth and hands with it, or doſſils of lint dipt in it, or in a mixture of vinegar and ſpirits of roſemary, and put into the noſtrils, are precautions little to be relied on. Some place confidence in chewing lemon peel and other aromatics, in wearing camphire about them, &c. The opinion, that mercury tends to prevent infection, has in ſome places gained ground. Whatever be the truth of this opinion, quickſilver worn in a quill, which has ſometimes been done even by medical men, can be regarded as nothing better than an amulet; a great variety of amulets are in uſe among the vulgar in every country. What truth there is in the obſervation, that thoſe who have iſſues in any part of the body are leſs ſubject to infection than others, it is difficult to ſay.*

We have reaſon to believe, from the obſervations of Dr. Currie in a treatiſe which I ſhall have occaſion to mention more particularly in conſidering the treatment of fever, that the cold bath will be found a better preventive, than moſt of the other means employed as ſuch.

One powerful mean of fortifying the body againſt infection, on many accounts deſerves attention, namely, the frequent expoſure to contagion. It is well aſcertained, that thoſe who are frequently expoſed to contagion become at length, in ſome

* See Dr. Smith's Treatise on the Jail Fever of Winchester.

meaſure, hardened againſt its effects, as thoſe who are accuſtomed to drink much wine are leſs readily intoxicated by it. Thus nurſes and phyſicians often eſcape infection.

Few things are better preventives than fortitude and equanimity. Nothing, we are informed by thoſe who voluntarily expoſed themſelves to the contagion of the moſt peſtilential fevers, was found ſo effectual as a ſteady adherence to their duty, baniſhing from their minds, as much as poſſible, all thoughts of danger, and avoiding every kind of paſſion, particularly the depreſſing paſſions. Every body knows, how much fear diſpoſes to infection; on this account it is of conſequence to ſtrengthen the faith of the ignorant in the efficacy of any thing they believe capable of preſerving againſt it.

Not only fear, and the other depreſſing paſſions, but every thing elſe that debilitates, diſpoſes to it "The yellow fe-" ver," Dr. Lining remarks, "was moſt fatal to thoſe de-" prived of freſh air, thoſe from cold climates, thoſe who " had moſt dread of it, thoſe who overheated themſelves " by exerciſe in the ſunſhine, or by intoxicating liquors." And Dr. Chiſholm obſerves, that convaleſcents, and thoſe labouring under chronic diſorders, were remarkably ſubject to the fever of Grenada; viſiting the ſick with an empty ſtomach, he adds, or when perſpirng, was dangerous.

In ſhort, we may regard every cauſe of derangement as prediſpoſing to infection; immoderate evacuations; the depreſſing paſſions, or the debilitating effects of the exciting; a poor and ſcanty diet, or exceſs in eating and drinking; much heat, or a cold and damp air; long continued vigilance, &c. Even ſleep, in which the vital functions are more languid than while we are awake, has been very generally obſerved to be favourable to the action of con-

tagion. It is remarkable, that ſo ſlight a debilitating cauſe as a diſagreeable odour may have the ſame effect.*

In checking the progreſs of contagious diſeaſes, it is of great importance, as much as poſſible, to ſeparate the ſick from the healthy. No more attendants ſhould be employed than are abſolutely neceſſary; and on the breaking out of a contagious fever a proper houſe ſhould be prepared for the reception of the poor, who are attacked with the diſeaſe.

The proper choice of nurſes, and other attendants is alſo a matter of conſequence. As thoſe employed about the ſick are unavoidably expoſed to infection, it is of importance to chooſe ſuch as are leaſt liable to it. The attendants on the ſick in particular ſhould be made acquainted with the circumſtances which diſpoſe to, or tend to prevent, infection; and when, as frequently happens, there is any ſet of people in the place, who from having formerly had the diſeaſe, from having been frequently expoſed to contagion, or any other cauſe, are leſs liable to infection than others, they ſhould be induced to undertake the office of attendants.

All the exanthemata, and even the yellow fever of ſultry climates, are leſs apt to attack thoſe who have formerly laboured under them. It was obſerved, that negroes are not ſubject to the yellow and ſome other fevers. This is true, however, only of thoſe negroes who have come immediately from the coaſt of Africa, or have been born and bred in the

* Every kind of soap, Van Swieten observes, has a nauseous smell, but particularly the coarser kinds, which are made of impure alkaline matters and quick lime mixed with train oil. Diermerbroeck observes, that in his hospital, three women who had been washing linen were next morning seized with the plague, and were all of them persuaded, they had taken it from the fetid smell of the soap.

Weſt Indies. It appears from the obſervations of Dr. Jackſon, that negroes who have been in Europe, or the higher latitudes of America, are ſubject to the yellow fever. It was probably owing to this circumſtance, that Dr. Ruſh having aſſured the black inhabitants of Philadelphia that they were in no danger from the fever which lately raged there, many of them periſhed in conſequence of attending the ſick.

It has been ſaid, that people of different ſhades between white and black are as ſubject to the fevers of white people as theſe themſelves are. Dr. Chiſholm remarks, of the fever of Grenada, however, that although people of all colours were ſubject to it, mulattoes and muſtees were leſs ſubject to it than whites, and negroes leaſt of all.

The habit of mind and body, as well as other circumſtances, which diſpoſe to infection, have juſt been pointed out. An attention to theſe, it is evident, is proper in chooſing attendants for the ſick. People labouring under certain diſorders are leſs liable to infection than others. But from the diſeaſed we cannot chooſe attendants.

While ſuch as are leaſt ſubject to infection are choſen for attendants, care ſhould be taken to prevent thoſe from approaching the ſick, who from any peculiarity in their ſituation are particularly liable to it.

It is obſerved, in cities where peſtilential diſtempers rage, that thoſe lately from the country are particularly liable to infection, and that the fevers of warm climates are moſt apt to ſeize on thoſe from cold latitudes. It often happens in the Weſt India iſlands, that fevers are kept up for years, in conſequence of a conſtant ſupply of freſh troops from Europe. Dr. Jackſon obſerves, that it is uncommon for people to have the yellow fever a ſecond time, unleſs between the firſt and ſecond attack they have been for ſome time in a cold climate.

Such are the circumſtances relating to the contagion of typhus, which deſerve attention. Concerning the manner in which this contagion acts, and the parts of the ſyſtem on which it makes its firſt attack, nothing ſatisfactory has been determined. It is a common opinion, that it makes its firſt attack upon the ſtomach. This is far from being aſcertained; although ſome plauſible arguments may be adduced in ſupport of it. A diſagreeable ſenſation in the ſtomach, and other diſorders of this organ, are often the firſt ſymptoms of contagious fevers. Dr. Lind even obſerves, that an uneaſy ſenſation in the ſtomach is ſometimes perceived at the moment the patient is infected. It is alſo in favour of this opinion, that dyſpeptic affections often occaſion irregular chills, reſembling the cold ſtage of contagious fevers; and that fevers are ſometimes cut ſhort at their commencement, by the operation of an emetic; and ſometimes though more rarely, by diarrhœa. But when we reflect on the ſympathy which ſubſiſts between the ſtomach and other parts of the ſyſtem, the inference from theſe facts is rendered very doubtful. It has been obſerved, that contagious fevers are particularly apt to derange any part of the ſyſtem which has been debilitated, and conſequently rendered more ſenſible to injury, by former diſeaſe or other cauſes. From which it does not appear improbable, that the ſuperior ſenſibility of the ſtomach is the only cauſe of its being particularly affected at the commencement of thoſe diſeaſes.

It is remarkable, that contagious diſeaſes ſeem (to uſe the language of medical authors) to change others into their own nature; ſo that while a contagious fever rages very generally, few other diſeaſes make their appearance, and thoſe which do, commonly partake of the ſymptoms of the prevailing diſeaſe. This obſervation has often been made of

typhus, and ſtill more frequently of the plague. This curious ſubject is conſidered at ſome length in Dr. Ruſh's work on the Fever of Philadelphia.

CHAP. III.

Of the Treatment *of* Continued Fever.

I have in the preface given a ſhort outline of my opinion of the nature of fever. I endeavoured in the Eſſay there alluded to, to ſhew that what in inflammation takes place in the capillaries of a part, takes place in thoſe of the whole ſyſtem in fever; and that as inflammation is removed by reſtoring the due action of the capillaries of the inflamed part, fever is removed by reſtoring that of the capillaries of the whole ſyſtem. To this concluſion, it was obſerved, we are led, both by the experiments related in the Introduction to the ſecond part of this Treatiſe, and by the various phenomena of fever.* I here offer it to the reader's attention, only as enabling

* The difference between this opinion and that of Dr. Cullen consists chiefly in the cause of fever according to the one, existing in the nervous, according to the other, in the vascular system. Dr. Cullen supposes that the remote causes of fever act by debilitating the nervous system, and that the fever can only be removed by restoring the energy of the brain, which is supposed to give energy to every other part. I have viewed the brain as affected only secondarily, in the same way as the skin, kidneys, and other organs, by the state of the vascular system; and the

us to ſimplify the arrangement of the means of cure. How much it enables us to do ſo, will appear by comparing the arrangement of Dr. Cullen, with that adopted in the following pages.

renewal of its energy I have regarded as nothing more than an indication that the functions of this system are restored.

Dr. Cullen appears to have been led to his opinion by a position which was taken for granted by the earlier Physiologists, that the heart derives its power from the nervous system. If it can be shewn that the brain is the only active part of this system, the nerves being merely channels by which its influence, and the impressions which excite it, are conveyed; and that the heart is often in perfeet vigour where no brain has ever existed, is it not proved that the power of the heart is independent of this system? (See my Essay on the Nature of Fever, page 94 and 95, and the first note marked 32.)

It is worthy of remark, that all the muscles of involuntary motion are excited by stimuli immediately applied to the muscles themselves, while those of voluntary motion are excited by the influence of the brain communicated through the nerves. (See the 31st and 32d notes in the Appendix to the Essay just referred to). This circumstance alone seems to demonstrate that the two sets of muscles are not equally dependent on the nervous system, and to afford an easy explanation, without having recourse to the supposed office of the ganglia, or any other hypothesis, of the one set being subjected to the will, and the other independent of it. A muscle of voluntary motion becomes one of involuntary motion if a strong stimulus is immediately applied to its fibres; but its action appears then to be independent of any influence derived from the brain, for it takes place with the same readiness, while the structure of the muscle remains entire, whether its communication with the brain remains, or is wholly cut off.

As the circulation and the functions immediately depending on it have been called the vital functions, and the more evident functions of the brain, and those immediately depending on them,

All caufes which debilitate the vital fyftem produce fever,* and in the treatment we fhall find, that all the means which prove ferviceable tend directly or indirectly to reftore its vigour; and as fome of thofe caufes act on the central, and others on the extreme parts of the vital fyftem, namely, the various fecreting and abforbing furfaces, the means of cure, we fhall find, admit of the fame divifion.

It appears from the fymptoms of fever, that although the extreme parts of the vital fyftem are always in a ftate of debility in this difeafe, the fever ceafing as foon as the tone of the fecreting and abforbing furfaces is reftored; the central parts are often in a ftate of increafed excitement, namely, while fufficient excitability remains in the heart and larger veffels to enable them to obey the increafed ftimulus arifing from the leffened action of the capillaries.† We fhall therefore find, that, while at all periods of fever, the means of exciting the extreme parts of the vital fyftem are indicated; thofe of exciting the central parts are only proper in the advanced ftages.

It farther appears, as we fhall find in the cafe of inflammation, that although the increafed action of the heart and

the animal functions; I shall, to save circumlocution, call the organs of the former set of functions the vital system, those of the latter, the animal system. All the functions may be divided into those two classes. By the one the animal is preserved, by the other it is connected with the world. If we attempt any farther division of the functions, we find no well-marked line of distinction; those which have been termed natural, being included in the vital functions. The action of the stomach and bowels, and of the various secreting organs, is as necessary to the life of the animal, though less immediately so, as that of the heart.

* See the Essay above referred to, page 123, and seq.

† See the Introduction to the second part of this Treatise.

larger veſſels evidently tends to excite the capillaries; yet it frequently, when there is great difficulty in exciting them, becomes ſo violent as to occaſion debility of the central parts of the vital ſyſtem, before the due action of its extreme parts is reſtored. When the action of the heart and larger veſſels, therefore, is ſo much increaſed as to threaten this conſequence, our practice muſt be directed to reſtrain it; a long continued and gentle ſtimulus often effecting what a more powerful and tranſitory one fails to do.

We find that the debility of the extreme parts of the vital ſyſtem may be induced, not only by debilitating powers immediately applied to this ſyſtem; but alſo by too great and long continued excitement of the animal organs, as might a priori have been inferred, the functions of the brain and nerves immediately depending on the action of the capillaries. It is hence apparent, that debility of the latter having taken place, excitement of the animal organs muſt increaſe it.

The reader will perceive that, from this view of the ſubject, the various indications in fever reſolve themſelves into two.

I. To remove the cauſes which tend to increaſe the debility of the capillaries, which is done;

1. By removing the cauſes of the fever.

2. By removing as far as we can, all cauſes which excite the animal functions;

3. By leſſening the ſenſibility to thoſe which remain.

II. To reſtore the due action of the capillaries, which is done:

1. By the uſe of ſtimuli, which act immediately on the capillaries.

2. By ſo regulating the action of the heart and larger veſſels as may tend moſt effectually to reſtore vigour to the capillaries.

For the means of fulfilling the firſt part of the firſt indi-

cation, it is only neceſſary to refer to what has been ſaid of the cauſes of fever.

The cauſes which excite the animal functions, are:

1. Exerciſe either of mind or body.
2. All impreſſions on the external ſenſes.
3. The irritation occaſioned by the preſence of aliment, or feculent matter in the alimentary canal.

1. When the ſymptoms of fever are conſiderable, every kind of exertion is to be avoided, and that poſture preferred which requires the leaſt exertion, the horizontal. The bed ſhould not be too hard, that the patient may be as little as poſſible oppreſſed with his own weight, and the covering ſhould be light. Speaking, it has juſtly been obſerved, as it accelerates the reſpiration, is particularly to be refrained from.

In the Typhus mitior, which is often protracted for a great length of time, and in which the febrile ſymptoms are mild, ſome degree of exertion, ſitting up a few hours, or if the weather is favourable, being carried into the open air is often ſerviceable. In the uſe of ſuch means, however, much caution is requiſite.

With reſpect to the mind; whatever excites the attention, whether buſineſs, or amuſement, is hurtful; and whatever excites the paſſions, ſtill more ſo. Some have thought there is advantage in calling the patient's attention to familiar objects, when he is threatened with delirium. This cannot be carried far without injury.

2. The ſenſation of thirſt muſt be removed, by permitting the patient to drink as freely as he pleaſes: and the irritation of a noxious atmoſphere is to be avoided by proper ventilation, by permitting only one attendant to remain in the patient's room, and by the ſpeedy removal of all excrementitious matter. And as it is neceſſary that the patient

ſhould not only reſpire a pure air, but that his body ſhould not be long immerſed in its own effluvia, he ſhould have frequent changes of linen, than which there is nothing more refreſhing to febrile patients. In all kinds of fever, except when the patient is perſpiring, or his temperature is below the healthy degree, the linen ſhould be cold. It ſhould always be dry.

Even while the ſymptoms of ſynocha remain diſtinctly marked; if the diſeaſe has ariſen from contagion, the body is found to generate it. In theſe caſes, therefore, to the foregoing means, ſhould be added, thoſe for deſtroying or correcting the properties of contagion, pointed out in the laſt chapter.

No part of the treatment deſerves more attention than the temperature of the patient's room. In conſidering cold as a cauſe of fever, it was obſerved, that the temperature of the human body is not diminiſhed by ſo rare a medium as the air, unleſs it be under 62°; nor in air of this temperature is its heat permitted to accumulate above the healthy degree; the rapidity with which it is abſtracted being duly proportioned to the quantity evolved.

But if the body diſengage more heat than in health, a lower temperature will be required for its due abſtraction. This always happens in ſynocha, and for the moſt part in typhus.*

* We have reason to believe from various experiments (see the different works on animal temperature) that wherever the temperature of the body is increased, independently of an increased temperature of the surrounding medium, the blood passes through the lungs more frequently than in health, and consequently that the rapidity of the circulation is increased. That this should happen in synocha cannot appear surprising; but in typhus, where the powers supporting the circulation are weakened, we should expect to find the circulation less rapid than in health, and consequently a less quantity of heat disengage, and this is the case in exquisitely formed typhus, in which the temperature of the body falls belows the healthy degree; but in other cases of this

How much below 62° the temperature of the air ſhould be, muſt be determined, by the temperature of the patient. In ſynocha, when there is no tendency to local inflammation the application of cold may be freer than in typhus. In the former, the temperature of the patient's room, when the ſtate of the weather permits it, ſhould never, perhaps, exceed 35° or 40°, and may often, with advantage, be ſtill further diminiſhed. It is not meant that it would be proper, conſtantly to expoſe the body to air of this temperature; but it is better that the proper temperature of the body ſhould be preſerved by covering it, that the patient may enjoy the refreſhing effects of breathing a cool atmoſphere.

When the temperature of the air is too low, there are many evident ways of raiſing it. The only circumſtances which require attention, are, that it ſhall be as uniformly raiſed as poſſible, that the patient ſhall not be expoſed to a current of air, and that the due proportion of oxygen gas in the air ſhall not be diminiſhed; for the laſt purpoſe we muſt take care that no part of the vapour ariſing from burning fuel,

fever the increased frequency of contraction in the heart and blood vessels more than compensating for its feebleness; the rapidity of the circulation is increased, and a greater quantity of heat disengaged. In determining the temperature in typhus we should always use the thermometer; if we judge by the feeling the acrid secretion by the skin which attends this fever, will generally make the temperature seem higher than it really is. Dr. Currie, in the Treatise above referred to, describes the thermometer and the manner of using it, which he found most convenient. It would be more accurate in the preceding and similar passages to use the term caloric instead of heat, there being a very evident objection to using the same term for the sensation and the cause which produces it. But caloric is not yet familiar in medical writings.

ſhall remain in the room, and that the external air ſhall have free acceſs.

It is much to be regretted that we are not poſſeſſed of means for lowering, equally efficacious with thoſe for raiſing, the temperature of the air. When it is too high, which it always is in well marked ſynocha, if it exceed 45°, we have no means of reducing it many degrees. This ſeems a principal cauſe of the great fatality of the fevers of warm climates. The hotter the weather, the more fatal they are obſerved to be; and it is even ſaid of the yellow fever of the Weſt Indies, that the weather becoming very warm or cool during this fever, is often ſufficient to ſave or deſtroy the patient. The only means we have of leſſening the temperature of the patient's room, in ſultry weather, is, as much as poſſible, to exclude the light, while the air is freely admitted; and frequently ſprinkle the floor and other parts of the room with cold water.

As the means we poſſeſs of reducing the temperature of the air are ſo limited, various methods have been propoſed for reducing that of the patient's body. "Whenever the patient is "in a climate whoſe heat is leſs than 97° of Farenheit's ther-"mometer, which is nearly the heat of the body of the pa-"tient, removing the air which is in immediate contact by "means of putting the atmoſphere in motion by any kind of "fan, renders that which is in immediate contact with the "body much colder than it would otherwiſe be. Such means "in caſe of too warm an atmoſphere ſeem to be very pro-"per to be employed."* They alſo tend to reduce the temperature of the patient's body by promoting evaporation. "When the object is to diminiſh heat, that may be obtained "with great certainty by the repeated uſe of the tepid affu-

* See Dr. Fordyce's Third Dissertation on Fever.

" ſion, ſuffering the furface of the body to be expoſed in the " interval to the external air, and if the beams of the ſun are " excluded, and a ſtream of wind blows over it, the heat may " thus be reduced where cold water cannot be procured, even " in the warmeſt regions of the earth, on the plains of Ben- " gal or the ſands of Arabia."* Dr. Wright † practiſed a ſimilar method. " Some lucky expedients, however, he ob- " ſerves have been practiſed, which ſucceſs alone can juſtify; " thus, when the moſt urgent ſymptoms have been ſubdued, " the patients were wrapt up in a wet blanket, a profuſe " ſweat was brought on, and an immediate recovery was the " conſequence."

Noiſe of any kind, and any degree of light which attracts the attention are injurious.

3. Irritation of the primæ viæ is to be prevented by abſtinence, by emetics at an early period, and at all periods, by ſupporting a free and regular action of the bowels Of all theſe means, which are alſo employed in fevers for other purpoſes, I ſhall have occaſion to ſpeak at length.

Beſides removing as far as poſſible all cauſes of irritation, moſt phyſicians think it proper to diminiſh by opium the ſenſibility to thoſe ſtill applied in all fevers, where the excitement is not conſiderable. Some have oppoſed this practice, it would ſeem, however, not on ſufficient grounds; but attention to the ſtate of the ſymptoms is neceſſary in recommeding it. When the ſkin is ſoft, and the increaſe of temperature and other ſymptoms during the exacerbation inconſiderable, a moderate doſe of opium may be given at bed time. But when

* See Dr. Currie's Treatise on the Use of Warm and Cold Water in Fevers. We shall soon have occasion to consider more particularly the use of water in fever, as a means of exciting the action of the skin as well as of diminishing the temperature.

† See Annals of Medicine, vol. 2.

the ſkin is parched, and the temperature riſes conſiderably during the exacerbation, we muſt either defer the opiate till the ſymptoms begin to remit, and particularly till the hot-parched ſkin is in ſome degree relaxed, or give a few grains of James's powder, or ſome other antimonial along with it; I have often ſeen (as others have remarked) ſmall and repeated doſes of opium ſucceed where larger doſes fail. Dr. Currie propoſes to combine the exhibition of opium with the affuſion of cold or tepid water, of which I ſhall preſently have occaſion to ſpeak. If we cannot ſucceed in inducing a degree of relaxation in the ſkin, and prevent the opium increaſing the heat, it muſt be deferred till towards the decline of the exacerbation, or perhaps to a more advanced period of the fever.*

Such are the means of anſwering the firſt indication in fever. The more powerful parts of the treatment belong to the ſecond indication, namely, to reſtore due action to the capillaries. This indication, it has been obſerved, is anſwered, 1. by the uſe of ſtimuli, which act immediately on the capillaries; and 2. by ſo regulating the action of the heart and larger veſſels as may tend moſt effectually to reſtore vigour to the capillaries.

It has from the infancy of medicine been obſerved, that increaſing the action of the ſkin often removes fever, but it is only lately that we have been taught how this ought to be done. When the patient was confined to a hot room and loaded with bed-clothes, if a ſweat were induced it was the

* In a letter to J. Bedley by Dr. Martin Wall, the reader will find an account of some cases of typhus treated with opium. For the use of opium in fevers he may also consult Dr. Fordyce's Dissertations on Fever; Dr Lind's Treatise on Fevers and Infections; Dr. Blane's Treatise on the Diseases of Seamen, and Dr. Campbell on the Fever of Lancashire.

conſequence of the exhauſting effect of the temperature, not of a return of the healthy action of the ſkin; and ſo far from being accompanied with the good effects of ſpontaneous ſweating, it almoſt always did harm, by leaving the ſkin in a more debilitated ſtate than before its appearance, not to mention the injury done by the painful impreſſions occaſioned by this mode of treatment.

We now excite the action of the ſurface, by forcibly propelling the blood towards it by emetics; by diaphoretic medicines; and by the application of cold. The means which excite the uſual action of the ſkin are more powerful in relieving fever, than thoſe which tend directly to produce ſweat, during which this organ ſeems to be rather in a ſtate of relaxation than of vigour; we ſucceed better with tartariſed antimony than with the compound powder of ipecacuanha; and for the ſame reaſon, we ſucceed better by the application of cold than by the hot regimen.

It is only in the commencement of fever that we ſucceed in exciting the healthy action of the extreme veſſels by emetics. On the firſt or ſecond day, they ſometimes put a period to the diſeaſe;* but after it has laſted for ſome time, a remedy, whoſe operation can be longer continued, becomes neceſſary.

Phyſicians have very generally abandoned the practice of giving wine and other heating medicines, with a view to promote ſweat in fevers, and opium is rarely employed with this view, except in Intermittents, or in ſmall doſes to aid other medicines.

Nauſeating doſes of emetics are more ſucceſſful. The following are the circumſtances to be attended to in their exhibition:

* See several of the authors I have had occasion to mention, particularly, Dr. Lind on Fevers and Infections.

As nauſeating doſes of emetics are debilitating, either by promoting ſweat or catharſis; they are beſt adapted to an early period.

They may often be employed with advantage at later periods, if given about the commencement of the exacerbations, when theſe are diſtinctly marked.

When much debility is expected, and they do not ſoon relieve the ſymptoms, we ſhould not perſevere in giving them.

Ipecacuanha and the preparations of antimony are the medicines uſually employed. The latter are preferable, both becauſe they more powerfully promote the action of the ſkin, and becauſe ſmall doſes of ipecacuanha are more apt to excite vomiting. James's powder and tartariſed antimony are the preparations of antimony at preſent generally uſed in fevers. Moſt practitioners prefer James's powder. How far this preference is well founded it is difficult to ſay. When emetics are employed, tartariſed antimony is preferable and all other medicines in theſe diſeaſes.

The power of neutral ſalts in promoting diaphoreſis is leſs than that of antimony, although almoſt all of them ſeem to poſſeſs this property in a greater or leſs degree. The ſalts compoſed of an acid and ammonia, particularly the acetate of ammonia given in a ſtate of effervescence, and the aqua ammoniæ acetatæ, poſſeſs moſt of it.

Various other medicines are recommended as diaphoretics in fever, chiefly by the older writers, which appear to have little effect of any kind.

The external and internal uſe of water both cold and warm are to be ranked among the moſt powerful of this claſs of remedies.

I. Of the employment of cold water in fever.

I have already had occaſion to make ſome obſervations on the advantage of a cool atmoſphere.

In warm weather the ſkin is more relaxed, in cold weather it is more vigorous. Even when the relaxation occaſioned by warm weather goes ſo far as to produce ſweat, the ſecreting power of the ſkin is not ſo great as under a due degree of exerciſe in a cold atmoſphere. This appears both from the ſtate of the urine, from which, as I have elsewhere pointed out, the degree of activity of the ſkin may be aſcertained,* and from the greater appetite in the latter caſe. Now a ſtate of fever comes in place of exerciſe, it ſupports the proper warmth of the body under the application of cold to its ſurface, and ſecures its good effects; for the application of cold to the ſurface is never proper in fever when the temperature falls below the healthy degree, and is moſt beneficial when it is conſidrably above it, provided the ſkin is dry. In ſhort, it is moſt ſucceſsful in fevers in the ſame circumſtances in which it is found in health moſt to excite the action of the ſkin; only in the one caſe, the increaſed temperature is ſupported by exerciſe, in the other, by a preternatural ſtimulus applied to the heart and blood veſſels.

It ſeems to be from not having attended to such circumſtances, that there has been ſo much difference of opinion reſpecting the propriety of ſweating in fevers. From comparing the various obſervations on the ſubject, we have reaſon to believe that it is only when the ſweat indicates a return of vigour to the ſkin, that it is beneficial. In this way the reader will find, that apparently contradictory obſervations may be reconciled. Clammy and partial ſweats, and even general and profuſed ſweats, unattended by other ſigns of returning vigour, are unfavourable.

Both the external and internal uſe of cold water in fevers

* In a Treatise published many years ago, intitled, an Experimental Inquiry into the Remote Cause of Urinary Gravel.

was known to the ancients; but among the moderns, it is only lately that the former has demanded much attention. Washing the body with cold water is said to have been first practised in fevers, in modern times, at Breslaw, in Silesia;* and it appears that the practice was followed in some of the neighbouring countries. Whatever were the effects of these trials, however, it has never been prevalent in Europe, probably, as Dr. Currie supposes, from the manner in which it should be regulated, not having been understood.

Several late practitioners in sultry climates, particularly in the West Indies, have employed it freely; and in 1786, Dr. Wm. Wright, who had practised for many years in the island of Jamaica, gave an account of some cases of fever successfully treated by the affusion of cold water, in the London Medical Journal. He has since published some additional observations on the same subject, in a letter to Dr. Garthshore, in the 7th volume of the Medical Facts and Observations, in which he gives an account of Dr. Gregory's manner of employing this remedy, and the success which attended its use in the Royal Infirmary of Edinburgh; and in the 2d. vol. of Annals of Medicine, he again gives a favourable testimony of its effects in the fevers of the West Indies. Dr. Jackson † (who was among the first who attempted to bring it into general use), and others in that climate, employed it. Even the alternation of the warm bath and affusion of cold water has been there practised in fevers, and it is said with the best effects. But no other writer has bestowed so much attention on the use of cold water in fevers, and

* See a Dissertation entitled, Epidemia Verna quæ Wratislaviam anno 1737 afflixit, in Act. Nat. Curios. vol. X.

† See Dr. Jackson's Treatise on the Fevers of Jamaica.

ſo accurately obſerved its effects, as the late Dr. Currie, of Liverpool.*

The moſt effectual way of uſing cold water externally in fever, is by affuſion. The patient is ſtripped naked, and a bucket of cold water is thrown over him. The temperature of the water ſhould be from 40° to 60°; the quantity from three to five gallons.

Dr. Wright uſed ſea water; Dr. Currie at firſt uſed freſh water, afterwards freſh water and vinegar, laſtly a ſolution of common ſalt. "I was led," the latter author obſerves, "to "prefer ſalt water to freſh on account of the ſtimulating "effect of ſea ſalt on the veſſels of the ſkin, by which I ap- "prehend the debilitating action of cold is prevented. Salt "water, either for the purpoſe of immerſion or affuſion, is "more grateful to the patient than freſh water; and it is "well known that it may be applied to the ſurface for a "length of time with much leſs hazard. Perſons immerſed "in ſea water, and eſpecially in ſaturated brine, for ſome "time together, preſerve the luſtre of the eye and the rud- "dineſs of the cheek longer than thoſe in freſh water of an "equal temperature; and ſuch perſons exhibit the vital reac- "tion ſtronger when removed from it."

Dr. Currie uſed brine in preference to vinegar and water, on account of the greater expence of the latter; but thinks that vinegar and water of a proper ſtrength will probably be found preferable. He obſerves, however, that no bad conſequences enſued from performing the affuſion without the addition of either ſalt or vinegar.

Waſhing the body with cold water, or cold water and vinegar, is a milder, but leſs effectual way, of uſing this re-

* See Dr. Currie's Treatise just referred to.

medy. It may be employed when the patient refuſes to ſubmit to the affuſion, or when from debility or the advanced ſtate of the diſeaſe, the latter is judged improper.

The proper period of the diſeaſe for the external uſe of cold water is the commencement of the hot ſtage. It cannot be employed too early, provided the chills are over, and the temperature is ſteadily above the healthy degree. On the firſt or ſecond day, if the hot fit is completely formed at ſo early a period, it often puts a ſtop to the progreſs of the fever. It rarely has this effect when employed on the third or fourth day, and never at a later period. Still, however, during the firſt eight or ten days, it is found to moderate the ſymptoms, and ſhorten the diſeaſe. Dr. Currie ſays he has ſeen it of ſervice on the eleventh, twelfth, or thirteenth day. At an advanced period, he obſerves, the water ſhould not be more than fifteen or twenty degrees below the heat of the body; and in moſt caſes he thinks that after the ninth or tenth day, or earlier if the patient be much debilitated, waſhing the body with tepid vinegar and water anſwers better than the cold affuſion. He alſo obſerves, that injury is done by continuing the employment of the cold affuſion during the period of convaleſcence; an application of cold, ſafe in the violence of fever, often proving hurtful after it has ſubſided.

Dr. Currie frequently employed the cold affuſion twice in the day, at noon and in the evening. When it was only employed once in the day, the evening was found the beſt time. "The ſafeſt and moſt advantageous time," he obſerves, "for uſing the aſperſion or affuſion of cold water, is when "the exacerbation is at its height, or immediately after its "declination is begun; and this has led us almoſt always to "direct it to be employed from ſix to nine o'clock in the "evening."

The immediate effects of the external uſe of cold water in fever are a diminution of the temperature and of the frequency of the pulſe, which are generally followed by diaphoreſis and ſleep.

In the following quotation Dr. Currie enumerates the cautions to be kept in view, in the employment of this remedy.

" 1. If the aſperſion of cold water," he obſerves, " on " the ſurface of the body be uſed during the cold ſtage of the " paroxyſm of fever, the reſpiration is nearly ſuſpended; " the pulſe becomes fluttering, feeble, and of an incalculable " frequency; the ſurface and extremities become doubly cold " and ſhrivelled, and the patient ſeems to ſtruggle with the " pangs of inſtant diſſolution. I have no doubt from what " I have obſerved, that in ſuch circumſtances the repeated " affuſion of a few buckets of cold water would extinguiſh " life. This remedy, therefore, ſhould never be uſed when " any conſiderable ſenſe of chillineſs is preſent, even although " the thermometer applied to the trunk of the body ſhould " indicate a degree of heat greater than uſual." In the 37th and 38th pages of his Treatiſe, Dr. Currie relates a ſtriking inſtance of the bad effects of cold affuſion employed during the chills.

" Neither ought it to be uſed when the heat meaſured by " the thermometer is leſs than, or even only equal to, the " natural heat, though the patient ſhould feel no degree of " chillineſs. This is ſometimes the caſe towards the laſt " ſtages of fever, when the powers of life are too weak to " ſuſtain ſo powerful a ſtimulus.

" It is alſo neceſſary to abſtain from the uſe of this re- " medy when the body is under profuſe perſpiration; and " this caution is more important in proportion to the conti- " nuance of this perſpiration. In the commencement of

" perſpiration, eſpecially if it has been brought on by vio-
" lent exerciſe, the affuſion of cold water on the naked bo-
" dy, or even immerſion in the cold bath, may be hazard-
" ed with little riſk, and ſometimes may be reſorted to with
" great benefit." The accuracy of this obſervation may in the preſent ſtate of our experience be queſtioned. Dr. Currie relates a caſe (p. 40 and 41) in which the cold affuſion was employed at the commencement of perſpiration, and although the event proved favourable, yet it ſuddenly produced a degree of cold in the extremities that was alarming, and had not the temperature at the time of affuſion been very high, (106°) it is probable that it wold have have had worſe effects. " After the perſpiration has continued for ſome time
" and flowed freely, eſpecially if the body has remained at
" reſt, either the affuſion or immerſion * is attended with
" danger, even though the heat of the body at the moment
" of uſing them be greater than natural. Perſpiration is al-
" ways a cooling proceſs in itſelf, but in bed it is often pro-
" longed by artificial means, and the body is prevented from
" cooling under it to the natural degree, by the load of heated
" clothes. When the heat has been thus artificially kept up,
" a practitioner, judging by the information of his ther-
" mometer only, may be led into error. In this ſituation,
" however, I have obſerved, that the heat ſinks rapidly on the
" expoſure of the ſurface of the body even to the external
" air; and that the application of cold water either by affu-
" ſion or immerſion is accompanied by a loſs of heat and a
" deficiency of reaction, which are altogether inconſiſtent
" with ſafety."

* * *

* The immersion is more troublesome and less beneficial than the affusion. The former was the manner in which the ancients used this remedy in fevers.

"When employed in the advanced ſtages of fever, where "the heat is reduced and the debility great, ſome cordial "ſhould be given immediateely after it, and the beſt is warm "wine."

Moſt of the trials which have been made with the cold affuſion have been in contagious fevers, that is, in thoſe fevers in which more or leſs of the ſynocha is ſucceeded by a greater degree of the typhus, which forms the chief part of the diſeaſe. It is while the ſymptoms of ſynocha laſt, however, as appears from the foregoing obſervations, that the cold affuſion is moſt beneficial.

Dr. Corrie relates many ſtriking proofs of the good effects of the cold affuſion in theſe fevers; of ſeventeen ſoldiers attacked with a fever of this kind, all of whom were immediately ſubjected to the cold affuſion once or twice a day, in fifteen the fever was cut ſhort, in two it went through its ordinary courſe. In the laſt edition of Dr. Currie's work, the reader will find ſimilar inſtances of ſucceſs atteſted by others.

What Dr. Currie calls the cool affuſion, is a milder form of the cold; the temperature of the water employed in the cool affuſion is from 75° to 87°. This, like waſhing, is recommended where from debility, or the continuance of the diſeaſe, the cold affuſion is judged to be hazardous.

The ſame cautions are ſtill to be attended to, whether we recommend affuſion, immerſion, or waſhing. When there is a ſenſe of burning in the palms and ſoles of the feet, keeping them moiſtened with vinegar is often very beneficial, and always ſafe and refreſhing.*

* See Dr. Currie's Treatise, p. 71

With reſpect to the internal uſe of cold water, it is not to be uſed as a drink in the cold ſtage. It increaſes the chills and other ſymptoms of this period. After the hot ſtage is completely formed, and eſpecially when the heat is conſiderably above the healthy degree, there are few things either more grateful or more beneficial than large draughts of cold water. They produce the ſame effects as the cold affuſion, but in a leſs degree, diminiſhing the heat and frequency of the pulſe, and diſpoſing to perſpiration and ſleep.

After the ſweat has become general, cold water is inadmiſſible. " At this time," Dr Currie obſerves, " I have per-
" ceived in more than one inſtance, an inconſiderate draught
" of cold water produce a ſudden chilneſs both on the ſur-
" face and at the ſtomach, with great ſenſe of debility and
" much oppreſſion and irregularity of reſpiration. At ſuch
" times, on applying the thermometer to the ſurface, the
" heat has been found ſuddenly and greatly reduced. The
" proper remedy is to apply a bladder filled with water heated
" from 110° to 120° to the ſcrobiculus cordis, and to adminiſ-
" ter ſmall and frequent doſes of tincture of opium, as recom-
" mended by Dr. Ruſh. By theſe means the heat is ſpeedi-
" ly reſtored."

Dr. Currie remarks, however, that at the commencement of the ſweat, before it flows freely and where the heat is conſiderable, a draught of cold water will often reduce the temperature to the degree at which perſpiration flows more freely, and thus bring the fever to a speedy iſſue.

It appears, in ſhort, that the action of cold drink in fevers, being in every reſpect ſimilar to, though leſs powerful than that of the cold affuſion, the ſame cautions are neceſſary in the exhibition of both.

II. Of the uſe of warm water in fevers.

The tepid affusion is performed in the same way as the cold. There is no addition made to the water, and the proper temperature is from 87° to 97°. When the water is applied by immersion it should be some degrees colder.

It may appear at first view, that the tepid affusion would be a means of raising the temperature of the body; that it should be employed where the cold affusion is improper; and avoided in cases where the latter is found beneficial. All this is contradicted, however, by the trials which have been made with it. At first," the author just mentioned, observes, "I "imagined that the tepid affusion might be beneficial in "cases where the heat of the body is below the degree necessary to render the cold affusion safe. I employed it, therefore, in those stages of fever where the heat did not exceed "the temperature of health. A little experience, however, "convinced me that this practtice was not without hazard, "for I found that in many cases at least, the heat of the human body is lowered as speedily by the affusion of tepid "water, as by the affusion of water that is cold. If I mistake not, the heat is lowered more speedily by the tepid "water."

It appears from Dr. Currie's observations, that the tepid affusion is beneficial in all those cases of fever, and in those only, in which the cold affusion has been found so; but that the effects of the former are much less permanent. He never saw the tepid affusion stop the progress of fever.

The effects of immersion in tepid water, however, do not correspond with those of the tepid affusion. The tepid bath is always improper where the temperature is considerable, and often serviceable when it has fallen too low.

The same may be said of the internal use of warm water in fever. During the cold fit, or in a more advanced stage, when the temperature has fallen below the healthy degree, it

is proper; and where the temperature is not much above this degree, it affists the operation of other fudorifics. The drink fhould alfo be tepid after the fweating has commenced, by whatever means induced, except in thofe debilitating fweats which occur in typhus, and reduce the ftrength without bringing relief. With thefe exceptions, cold drink is more beneficial in fevers.

It will be neceffary afterwards to make fome additional obfervations on the internal ufe of water as a means of diminifhing excitement.

It is faid that the application of diftilled fpirits to the fkin, has been of great ufe in fevers.* Rubbing it with warm oil is alfo faid to have been of fervice in certain fpecies of fever. This appears a doubtful practice from the heat and irritation which muft attend it.

Among the means of exciting the action of the fkin may be ranked the ufe of mercury, which is very generally recommended by the practitioners of fultry climates, and whofe good effects feem in part to depend on its diaphoretic property. "By calomel," Dr. Wright obferves, "the pores of the fkin were opened, "a refolution of the fever was brought about, and the patient "happily recovered." In another place he obferves, "And "we recollect of no inftance, where mercury had been free-"ly given, and perfevered in till it fhewed itfelf in the mouth, "which was not attended with the happieft confequence."

Dr. Chifholm gave mercury to very great extent, endeavouring as foon as poffible to excite a falivation. He fometimes gave ten grains every three hours till this effect was produced, by which means he obferves he has fucceeded in cafes which feemed defperate.

It is probable, however, that thefe obfervations will not l.

* Medical Observer, vol. 2.

found to apply to the fevers of this country. I have already had occaſion to remark, that the fevers of ſultry climates are generally accompanied with local affections. For many of which mercury is a powerful remedy.

Dr. Chiſholm is one of the few practitioners who have given us any account of the appearances on diſſection after death in the fevers of ſuch climates. From his diſſections it appears that, beſides other local affections, the liver, as indeed might be inferred from the ſymptoms of moſt of the fevers of the Weſt Indies, was almoſt always diſeaſed. It is owing to the local affections which attended the fevers of ſultry latitudes, that their treatment is ſo difficult, and that that which ſucceeds in one epidemic is often hurtful in another.

Such are the means of promoting the action of the ſkin in fever, and the circumſtances which influence their employment. Bliſters and rubifacients have been much recommended in this diſeaſe, and might at firſt view be ſuppoſed an efectual means of exciting the action of the ſkin. From their operation being partial, however, and from the nature of inflammation, this inference appears doubtful, and their effects by no means ſanctions it. They are improper both in the well marked ſynocha, and in the worſt forms of typhus. In the former their irritation increaſes the excitement; in the latter, which is generally attended with a diſpoſition to gangrene, they often induce it.* The ſpecies of continued fever therefore in which bliſters are chiefly employed is the typhus mitior, or what is commonly called the nervous fever.

* See the observations of Sir John Pringle, Mr. Clark, and others. A thick tough matter like leather, covering blistered parts, shews a tendency to gangrene. "If under this," Dr. Lind observes, "white or "ruddy specks appear, it is a favourable symptom; if pale or dark, a "very bad one.

And reſpecting the propriety of employing them even in this fever, unattended by any local affection, there is much difference of opinion.

No author has given ſo favourable a teſtimony of the effects of bliſters in the typhus mitior as Dr. Lind. He recommends their application at an early period, and obſerves, that, " In a moderate infectious fever, where the ſource of " infection is not very violent, if twenty patients be bliſtered, " ſixteen will next morning be entirely free from head-ach, " heat, pain, and fever." Dr. Cullen was alſo a ſtrong advocate for the uſe of bliſters in fever; but thought that they are employed with moſt advantage at an advanced period of the diſeaſe. " It appears to me that bliſtering may be employed " at any period of continued fever; but that it will be of " moſt advantage in the advanced ſtate of ſuch fevers, when " the reaction being weaker, all ambiguity from the ſtimu- " lant power of bliſtering is removed."

When we compare theſe obſervations with thoſe of other authors, however, we cannot help ſuſpecting that both Dr. Cullen and Dr. Lind had too favourable an opinion of this remedy. " Whether exciting inflammation," ſays Dr. Fordyce, " has or has not the ſame effect in a regular continued " fever, which it has in health, can only be known by mak- " ing theſe applications to the body of a perſon affected with " regular continued fever. As far as the author's experience " goes, when any ſtimulus has been employed ſo as to pro- " duce inflammation, when a patient has become weak to- " wards the end of a regular continued fever, the only differ- " ence which has occurred has been, that phlegmonous in- " flammation has not produced hardneſs, fulneſs and ſtrength " of the pulſe; but both phlegmonous inflammation, and in- " flammation of the ſkin have occaſioned greater frequency " of the pulſe, have rendered it weaker and ſmaller, and in

" health have prevented ſleep, and the patient taking the " ſame quantity of nouriſhment, and have depreſſed and " deranged the whole ſyſtem."*

Sir John Pringle obſerves, that bliſters were only of ſervice in the jail fever when the patient was threatened with an inflammatory affection of the brain. " Bliſters before " *uſeleſs* became then of ſervice."† He alſo remarks of the inflammatory fever, that at firſt he uſed to employ bliſters at an advanced period of the diſeaſe, when he thought the patient could not bear any further loſs of blood, but afterwards confined their uſe to thoſe caſes where the head-ach was conſiderable, which they ſeldom fail to relieve.

" Notwithſtanding my having watched the effects of bliſ- " ters," Dr. Moore ‡ obſerves, " with all the attention I am " capable of, and formerly with a ſtrong prepoſſeſſion in their " favour, I cannot aſſert that I ever knew veſications of any " uſe in this diſeaſe," the typhus mitior, " but I have fre- " quently ſeen the patient teazed by their irritating quality " without their ſeeming to have any other effect."

Upon the whole, although it is probable that the obſervations of Dr. Cullen and Dr. Lind are not wholly without foundation, thoſe of the majority of writers tend to prove that little is to be expected from bliſters in fevers unaccompanied by local affections. For the removal of many of theſe, they are among the moſt powerful remedies we poſſeſs. When uſed with a view to remove head-ach, coma or delirirum, they ſhould be applied to the nape of the neck, or if theſe ſymptoms be conſiderable the head ſhould be ſhaved, and the bliſter applied over it. For like other local remedies, bliſters are the more powerful, the nearer they are applied to

* Dr. Fordyce's third Diſſertation on Fever.

† Obſervations on the Diſeaſes of the Army.

‡ Medical Sketches.

the part affected. Blifters fometimes occafion a degree of ftrangury from the abforption of the cantharides; this effect may generally be prevented or removed by fmall dofes of camphire or merely by dilution.

With refpect to rubefacients, they are ftill more improper than blifters in the fynocha, becaufe they occafion an equal or greater degree of irritation, and are unattended by any difcharge. In the worft forms of typhus, indeed, they are fafer than blifters; even rubefacients, however, may be the means of inducing gangrene, where there is much tendency to it, and it does not appear, that in any kind of typhus, unattended by local affections, they have been found of much ufe. Muftard poultices applied to the feet are often employed with advantage when coma fupervenes on the typhus mitior.

Analogous to the office of the fkin, the external furface of the animal fyftem is the office of its internal furface, if I may ufe the expreffion, the alimentary canal; and fuch is the fympathy between thefe furfaces, that if one is languid, the other is generally affected in the fame way; and if we excite either, we at the fame time, in a greater or lefs degree, increafe the action of the other. If the bowels are conftipated we find the fkin dry and fhrunk; as foon as the bowels are reftored to action, the fkin becomes foft and moift, and vice verfa, except when, the fecretion by the fkin being fuddenly ftopped, the fluid which fhould have paffed by it, is thrown on the bowels, applying to their veffels a ftimulus which prevents their inactivity.

We might, therefore, from the effect of diaphoretics, a priori, have expected confiderable advantage from exciting the bowels, not to mention that their veffels form fo large a portion of the circumference of the vital fyftem. Every phyfician muft have obferved the excellent effects of fupport-

ing the due action of the bowels in fever; but no other writer has placed this subject in so clear a point of view as Dr. James Hamilton, of Edinburgh.* I have found the most decided advantage in the earlier stages of fever from exciting catharsis to the extent which he recommends. So free a use of cathartics has not appeared to me equally beneficial in the more advanced stages. Dr. Hamilton gives the following account of his practice, and of the circumstances which led to it. Speaking of the *calx antimonii nitrata* he observes: "This antimonial remedy was not ineffectual; but I remarked, that it was beneficial only when it moved the belly, the stools were black and fetid, and in general, copious. On the discharge of these, the low delirium, tremors, floccitatio, and subsultus tendinum, which had prevailed, abated in some cases; the tongue, which had been dry and furred, became moister and cleaner; and a feeble creeping pulse acquired a firmer beat.

"Reflecting afterwards on these circumstances, it occurred to me, as the purgative effect appeared to have been the useful one, that any purgative medicine might be substituted for the *calx antimonii nitrata*; and that by this substitution, the unnecessary debilitation of an exhausted patient, by vomiting and sweating, might be avoided.

"More extended experience confirmed these conjectures; and I was gradually encouraged to employ purgative medicines early in typhus, and to repeat them in the course of the disease. And after having long and strictly directed my attention to this point of practice, I am now thoroughly persuaded that the full and regular evacuation of the bowels relieves the oppression of the stomach, and mitigates the other symptoms of fever."

* Observations on the Utility and Administration of Purgative Medicines in several Diseases, by James Hamilton, M. D. &c.

In one part of the preceding quotation, my experience does not correſpond with that of Dr. Hamilton. I think I have ſeen very decided advantage from combining antimonials with the purgative plan in the commencement of fever; and in a great number of inſtances I have ſeen the former produce the beſt effects, even where they did not prove cathartic.*

The debility produced by cathartics is leſs permanent than we ſhould be led to ſuppoſe, either from the extent of the diſcharge, or its effects in ſubduing excitement. This ariſes from its being only the thinner and leſs important part of the blood which is abſtracted by them.

Some attention is requiſite in the choice of cathartics. In the commencement of fevers, particularly when the excitement runs high, the mercurial, antimonial, and ſaline cathartics are the beſt. At more advanced periods, thoſe which tend leſs to reduce the excitement are preferable, rhubarb, aloes, &c. and Dr. Fordyce has juſtly obſerved, that when ſeveral cathartics are combined, they occaſion leſs ſickneſs and pain, and are more certain in their operation than when taken ſingly. Clyſters have been much uſed in fevers for the purpoſe of exciting the bowels. By their effect, however, the upper and more important part of the alimentary canal is little if at all excited. They ſhould never be truſted to for the purpoſe of moving the bowels in fever.† We ſhall preſently ſee, that they are ſometimes uſed with advantage for another purpoſe.

The only other ſecreting ſurface of ſufficient extent to de-

* There are few medical writers to whom the public are so much indebted as to Dr. Hamilton. It is not the practice in fevers only which has been improved by the above work, but that of many other diseases. In the chorea S. Viti in particular, hitherto so little under the power of medicine, I have found his plan almost uniformly successful.

† See Dr. Hamilton's observations on this subject.

mand particular attention in the treatment of fever is that of the kidneys. Medicines have ſeldom been uſed in this diſeaſe expreſsly with a view to excite the kidneys, but many of thoſe employed for other purpoſes ſeem to owe much of their beneficial effects to their action on theſe organs, particularly the acetate, nitrate, a ad ſuper-tartrate of potaſh.

Such are the means of fulfilling the firſt part of the ſecond indication in fever, thoſe which act by more directly ſtimulating the capillaries. We are now to conſider thoſe, by which the action of the heart and larger veſſels may be ſo regulated, as may tend moſt effectually to reſtore vigour to the capillaries.

The general principle to be kept in view, in this part of the treatment, is, that the action of the capillaries is beſt reſtored, as appears from a variety of obſervations, by a moderate, and long continued excitement of the heart and larger veſſels; if their excitement is allowed to run high, which it is apt to do, when the debility of the capillaries is great, and there is conſiderable vigour remaining in the ſyſtem, theſe organs are debilitated before due action is reſtored to the capillaries; and if on the other hand it is allowed to fall too low, the ſtimulus applied to the capillaries, even though long continued, may be too feeble to excite them.

As the means which more directly excite the capillaries tend to remove the cauſe of preternatural action in the heart and larger veſſels, and as by the evacuation which they occaſion they tend to reduce the volume of the blood, the remedies we have juſt been conſidering, it is evident, with their other good effects, muſt reduce the excitement which is almoſt always too great at the commencement of fever, and are ſometimes ſufficient for this purpoſe.

In the early ſtages of moſt fevers, however, which laſt above a few hours, it is proper, with the preceding means, to

have recourſe to ſuch as more effectually reduce the increaſed action of the heart and larger veſſels.

It appears from the obſervations made in ſpeaking of blood-letting in intermittents, and the modus operandi of this remedy, that diminiſhing the quantity of blood is the moſt powerful means of diminiſhing the action of the heart and blood-veſſels. But as the quantity of blood cannot be much diminiſhed without debilitating every function of the ſyſtem, it is of conſequence where the ſymptoms run high, to leſſen as much as we can its ſtimulating power, that the excitement may be diminiſhed with as little evacuation as poſſible.

The means of diminiſhing the ſtimulating power of the blood are,

1. Dilution, and

2. The medicines which have been termed refrigerant.

1. There is a large proportion of water in the blood, to which it owes its fluidity; and the power of this fluid to excite the veſſels, its quantity being the ſame, is inverſely as the degree in which its ſaline and other ſtimulating parts are diluted. Dilution, therefore, is the moſt ſucceſsful means of diminiſhing this power, and that which nature by an increaſe of thirſt points out in all caſes of exceſſive excitement. In typhus there is often little or no thirſt; but in ſynocha it is generally inſatiable. Every perſon in this fever, Van Swieten remarks, unleſs his intellects be deranged, is led by inſtinct to demand water and watery liquids. And this inſtinct beſt points out the quantity which is neceſſary. We are neither, as was once a practice, to prevent the patient from ſatisfying his thirſt, nor to run into the extreme of the Dieta Aquea of the Spaniſh and Italian phyſicians, and force the patient to take every day eight or nine pints of water.*

* See an account of the Dieta Aquea, in the 36th volume of the Philosophical Transactions.

When the excitement is conſiderable, diluting liquids ſhould alſo be injected per anum. Sydenham made much uſe of clyſters compoſed of a mild vegetable decoction and ſugar, or of milk and water heated to the proper temperature; and ſo powerful did he find theſe means in allaying excitement, that he cautions againſt the immoderate uſe of them, leſt the excitement be brought too low.

Dilution is alſo the chief means of diminiſhing the ſtimulus of the food. The food of a patient in ſynocha, ſhould conſiſt of mild decoctions, barley water, or water gruel, or water thickened with ſago, &c. Freſh acidulous fruits, ſhould make a principal part of the diet. Theſe belong to the head of refrigerants, although from their refreſhing effects, and nutricious quality, they are uſeful in all kinds of fevers.

2. The uſe of neutral ſalts, which poſſeſs more of the refrigerant quality is confined to thoſe caſes in which the excitement is above the healthy degree.

"Some metallic ſalts," Dr. Cullen obſerves, "have been "employed as refrigerants in fevers, and particularly the "ſugar of lead. But the refrigerant powers of this are not "well aſcertained, and its deleterious qualities are too well "known to admit of its being freely uſed."

When the foregoing means fail ſufficiently to diminiſh the excitement, we muſt have recourſe to veneſection.

As the increaſed excitement of the heart and blood veſſels ſupports that of every other part of the ſyſtem, it is not ſurpriſing that blood-letting has been found the moſt effectual remedy in ſynocha.

Our view in the commencement of fever, however, is not to reduce the action of the heart and larger veſſels to the natural ſtandard. This would be obviating the means which the nature of the circulation affords for removing the cauſe of the

diſeaſe. It is only our object to leſſen excitement when it goes beyond the degree moſt favourable to this end.

If the means employed be ſo injudicious, as to reduce the excitement of the heart and larger veſſels more than is neceſſary to inſure its requiſite continuance, the patient will ſuſtain a double injury. The ſtimulus neceſſary to the excitement of the capillaries will be removed, and the debility of the heart and larger veſſels hurried on, ſo that the fever will ſoon begin to aſſume its worſt form. As blood-letting is the moſt powerful means of diminiſhing excitement, it is conſequently the moſt apt to induce debility; and caution is particularly neceſſary in the ſynocha, which, if not terminated at an early period, is conſtantly ſucceeded by a diſeaſe of debility. It will be requiſite, therefore, at ſome length, to conſider the various circumſtances which demand attention in the employment of this remedy.

It is not always ſufficient in the treatment of fever, to ſtudy the ſymptoms of the case for which we preſcribe. If the fever be epidemic, we muſt acquire a knowledge of its general courſe, that we may know what ſymptoms to expect; for our plans in the treatment of fever are often influenced as much by what the ſtate of our patient will be, as by what it is. If much debility is expected, we muſt be cautious in recommending evacuations. An attention to the prevailing epidemic, therefore, is mentioned by Dr. Cullen, as the firſt circumſtance to be attended to in conſidering the propriety of blood-letting in fevers.

We muſt attend to the nature of the cauſe, which produced the fever. It appears from what was ſaid of the cauſes of fever, that an atmoſphere loaded with putrid effluvia is one of the moſt common, and that a fever thus produced is afterwards communicated by its peculiar contagion. All fevers, it was obſerved, ariſing from putrid effluvia or contagion, whatever

be the ſtate of the patient at the time he is attacked, or the nature of the ſymptoms at an early period, will ſoon aſſume the form of typhus. In ſuch caſes, therefore, blood-letting is ſeldom admiſſible, even although the excitement at the commencement be conſiderable.

When, on the contrary, the fever has ariſen from cold, from ſtrong paſſions, violent exerciſe, &c. although we know, that if it be protracted for many days, the ſymptoms of ſynocha will be ſucceeded by thoſe of typhus; yet we have reaſon to believe, that the ſynocha will form the principal part of the diſeaſe, and that if the excitement be prevented from running high at the commencement, the debility towards the termination will probably be inconſiderable. In theſe fevers, therefore, blood-letting is more frequently proper.

The ſeaſon, climate, and even ſituation, are not to be overlooked in employing this remedy.

On this part of the ſubject, ſome obſervations were made in ſpeaking of intermittents. It is moſt to be dreaded in thoſe circumſtances in which the fever is apt ſuddenly to aſſume the form of typhus; both becauſe the ſymptoms of debility are then generally more alarming than where the change is more gradual; and becauſe, when the typhus ſupervenes ſoon after blood-letting, it often proves fatal.

I have already had occaſion to obſerve that the changes of fevers are more ſudden in ſultry, than in cold and temperate climates; and in large cities than in the country; in autumn than in ſpring. In ſultry climates, we have ſeen, it is often difficult to determine what is beſt to be done. At the commencement, the ſymptoms are ſometimes ſo violent as to endanger life, and yet we have no means of diminiſhing the excitement, without the riſque of involving the patient in dangers no leſs alarming.

In peruſing the works of thoſe who have practiſed in ſuch

climates, we find them much divided in their opinion. Some advifing the liberal ufe of the lancet ; and others, having frequently experienced its dangerous confequences, almoft binding themfelves by a folemn engagement never to recommend it again in idiopathic fevers within the tropics.

In this, as in moft other cafes, extremes are to be avoided. And there is reafon to believe, that we give the patient the beft chance of recovery, if we never in fuch climates recommend blood-letting in idiopathic fever, except when the excitement is fuch as threatens to prove fatal, either by carrying off the patient in the height of the fynocha, or by the debility which always follows violent excitement ; and then only to that extent, which the fymptoms abfolutely require. What the fymptoms are which mark this degree of excitement, I fhall prefently endeavour to point out.

Although the changes of fevers are more fudden, and confequently blood-letting more dangerous, in large cities than in the country, even in temperate climates ; yet this cafe never proves as perplexing as the foregoing, for here the excitement, at the commencement of idiopathic fevers, is feldom very great. The fame obfervation applies to the autumnal fevers of temperate climates ; the excitement is rarely fuch as renders blood-letting proper.

In determining the degree of excitement which warrants blood-letting in idiopathic fevers, we are influenced by the obfervations juft made ; for the fame degree of excitement which would induce us to recommend this remedy when the epidemic partakes much of the fynocha, does not warrant its employment when the prevalent fymptoms are thofe of typhus. The fame degree of excitement which warrants it in fevers from cold, rage, or violent exercife, does not warrant it in fevers from putrid effluvia or contagion. In the latter cafe, although the excitement at an early period be confiderable,

we know that the nature of the fever will ſoon overcome it. In the former, if the excitement is not diminiſhed at the commencement, there is reaſon to believe that it will increaſe, while at the ſame time we know that the debilitating effects of blood-letting in this caſe are leſs to be dreaded.

Let the nature of the fever be what it may, however, we muſt keep in view, that violent excitement is itſelf a highly debilitating cauſe, and often debilitates more than a well-timed blood-letting which relieves it.

The degree of excitement which warrants blood-letting in the cold and temperate climates and in the country, does not warrant it in ſultry climates and large cities, becauſe in the latter caſes we generally dread more the deficiency than the exceſs of excitement.

The age and habit of the patient is alſo to be attended to. Young people, it has already been obſerved, and people in the vigour of life, bear evacuations of all kinds better than thoſe advanced in age. The ſame may be ſaid of people of a full habit, compared with ſuch as are naturally infirm or reduced by diſeaſe or other cauſes.

If the patient has been ſubject to inflammatory diſeaſes theſe are apt to be renewed on ſlight occaſions; and conſequently ſymptoms indicating their approach muſt often be removed by more vigorous means, than are neceſſary for the removal of the ſame ſymptoms in thoſe who have not been ſubject to ſuch diſeaſes. If the patient has been in the habit of loſing blood, it is often proper to employ this remedy where it would not otherwiſe have been neceſſary. Habitual blood-letting produces habitual plethora, which conſtantly demands a repetition of the ſame remedy.

It thus appears that no general rule can be laid down reſpecting the degree of excitement in fevers which demands blood-letting; the determination of this queſtion, unleſs the

excitement be extreme, depending as much on the conſideration of the circumſtances juſt mentioned, as the ſymptoms preſent.

When the excitement is ſuch as to be accompanied with delirium, which when it ariſes from violent excitement is of the furious kind, or when coma, which more rarely happens, appears in well marked ſynocha, we muſt always have recourſe to blood-letting.

Delirium from exceſs of excitement is mentioned as a ſymptom denoting the neceſſity of blood-letting in all caſes: but in general it is indicated by a much leſs degree of excitement. If the face be fluſhed, the pulſe full and ſtrong, and the heat conſiderable, it is uſually to a greater or leſs extent employed with advantage, unleſs the nature of the fever or the ſituation of the patient particularly counterindicates it.

What was ſaid reſpecting the period of the diſeaſe proper for blood-letting, in ſpeaking of intermitting, is nearly applicable to continued fevers. As ſoon as the ſymptoms of ſynocha begin to decline, the proper period for blood-letting is paſt. Even Huxham, prejudiced as he and moſt of his cotemporaries were in favour of this remedy, admits in his treatiſe on fevers, that "bleeding, unleſs in the beginuing, ſeldom "did ſervice."

We muſt attend to the appearance of the blood drawn, in order to determine the propriety of repeating the blood-letting.

There are three morbid ſtates of the blood which particularly demanded attention in fevers.

1. Where there is much of the inflammatory diatheſis, the blood is either more fluid or coagulates more ſlowly than natural, ſo that the red globules in part ſubſide before the coagulum is formed. Hence there are no red globules on the upper part of the coagulum, which on this account appears of

a buff colour, and has been termed the buffy coat. In different cases it is thicker or thinner, according as the blood has remained fluid for a longer or shorter time. The thicker the buffy coat is, and the more it contracts giving a cup-like form to the coagulum, it generally indicates the greater degree of inflammatory diathesis. The buffy coat, however, does not universally indicate the presence of this diathesis, nor does it universally appear when the diathesis is present. It is sometimes absent even in cases of actual inflammation, and now and then appears when blood-letting has been very improperly employed.

It may also appear thicker or thinner, or its appearance may be wholly prevented, by the circumstances of the blood-letting. If the blood flows slowly, and is permitted to trickle down the arm, the coagulation will begin before it reaches the vessel, and consequently the red globules, if they subside at all, will subside more slowly. If the blood is received into a broad shallow vessel, it will coagulate more quickly, than if received into a narrow deep vessel, and the buffy coat consequently will be thinner. These circumstances, therefore, are to be attended to in forming our judgment from it.

When the buffy coat appears, the crassamentum is generally firm, and that part which forms this coat being free from red globules, is firmer than the crassamentum of healthy blood.

2. The blood is sometimes of a thin consistence. There are too few red globules in it, and the proportion of water is too great. Such is the state of the blood in many diseases of debility, in the typhus mitior, the different kinds of dropsy, &c.

3. The last kind of blood is found in the vessels of those labouring under typhus gravior and scurvy. It has a dissolved appearance, does not coagulate so readily as healthy blood,

the ſerum is of a redder colour than natural, and the craſſamentum of a looſer conſiſtence.*

If the blood drawn in fever be of the firſt kind, it gives encouragement to repeat the blood-letting, ſhould the ſymptoms ſeem to require it.

If, on the contrary, it be of the ſecond, and ſtill more if of the laſt kind, we ſhall generally have committed an error in recommending veneſection, which, eſpecially if repeated, may deſtroy the patient.

In determining the propriety of repeating the blood-letting, we muſt attend to the effects it has produced. If the ſymptoms are alleviated, if the pulſe from being ſtrong and full becomes nearly natural, and the heat is diminiſhed, there is no occaſion for repeating it. If the ſtrength is much reduced, if the diſeaſe begins to aſſume the form of typhus, which ſometimes very ſuddenly happens after an ill-timed or exceſſive blood-letting, the repetition of it would be attended with the worſt conſequences. If, on the other hand, the ſymptoms continue unabated, the operation muſt be repeated to at leaſt the ſame extent. Laſtly, if the ſymptoms ſtill continue, but with a conſiderable abatement, it will be proper to repeat the blood-letting as ſoon as they begin to ſuffer an exacerbation, which very often happens, till the operation has been performed ſeveral times.

Such are the circumſtances which ſhould influence our judgment in the uſe of veneſection in continued fever.

It ſometimes, though rarely, happens in fevers, that the excitement, inſtead of being diminiſhed, increaſes after blood-letting; a circumſtance which might diſconcert a practitioner not aware of it. In very plethoric habits the quantity of blood

* See a quotation given in p. 182, from Dr. Fordyce's third Diſſertation on Fever.

ſeems ſometimes to oppreſs the powers ſupporting circulation, ſo that it is not moved with the rapidity which is neceſſary to occaſion the ſymptoms of violent excitement. Although (ſays Van Swieten) the moſt neceſſary and only remedy in violent fever is blood-letting, yet it ſometimes happens in plethoric people, that after veneſection the fever from being low, becomes very violent. He relates two caſes of this kind, one from Sydenham's works, and another which Boerhaave uſed to relate in his lectures on fevers. Similar caſes are to be found in the works of Dr. Ruſh and others.

In ſuch caſes the blood-letting is to be repeated, as in other caſes of ſynocha, till the excitement is ſufficiently diminiſhed.

It appears from what was ſaid of the modus operandi of blood-letting, that it is the more effectual, the more ſuddenly the blood is abſtracted, On this account it was once the practice to let blood from both arms at the ſame time. It is enough, however, to make the orifice pretty large, a circumſtance not always ſufficiently attended to.

For the ſame reaſon that we abſtract the blood ſuddenly, namely, that the action of the powers ſupporting circulation may be diminiſhed with as little loſs of blood as poſſible; ſome have recommended, in thoſe caſes where much is to be feared from a conſiderable loſs of blood, to keep the patient more or leſs in the erect poſture during the blood-letting, in order to induce a degree of ſyncope by a ſmall loſs of blood. The effects of this mode of blood-letting, however, are tranſitory, and the horizontal poſture is uſually preferred, that we may not be prevented taking away the proper quantity of blood. In this poſture, many can bear the loſs of 16 or 18 ounces with eaſe, who could not in the erect poſture loſe half the quantity without fainting.

In general blood-letting, that is, when our only view in letting blood is to relieve a ſtate of general excitement, it is

of no conſequence from what part the blood is taken, provided it be from the upper part of the body for a reaſon given, in conſidering the modus operandi of blood-letting. The moſt convenient place, therefore, the arm, is generally choſen. But when there is preſent any local affection which may be relieved by blood-letting, by abſtracting the blood from the part affected or its neighbourhood, the ſame operation may anſwer the purpoſe, both of general and local blood-letting. Thus when delirium or coma ſupervenes in ſynocha, it is better to take the blood from the temporal artery, or the jugular vein, if this can be readily made to ſwell, than from the arm. In bleeding from the jugular vein in affections of the head, we muſt compreſs that vein alone from which the blood is about to be taken.

When the ſtate of the ſymptoms requires both blood-letting and the exhibition of an emetic, the blood-letting ſhould precede the emetic. Sydenham ſays he could mention ſeveral caſes where this precaution was not attended to, in which the efforts of vomiting produced ſuch a flow of blood to the head, that a rupture of ſome of the veſſels of the encephalon and a fatal apoplexy were the conſequences.

Bliſters alſo ſhould be delayed till after the blood-letting, becauſe their irritation will be leſs hurtful when the excitement is diminiſhed.

Till within the laſt fifty years, it was an opinion almoſt univerſally received among phyſicians, that the cure of typhus as well as ſynocha was to be attempted by veneſection; and this opinion is ſtill ſo prevalent in many places, and has lately been maintained by ſuch reſpectable authority, that it will be proper at ſome length to conſider the foundation on which it reſts.

Blood-letting has been employed in typhus from a very

very early period of medicine. Galen particularly recommends it. Celſus looked upon it as one of the moſt valuable remedies in peſtilential fevers, And Proſper Alpinus informs us, that the Egyptians let blood in all putrid diſorders. We know with what freedom Sydenham uſed the lancet. "Ac "proinde," he obſerves of the continued fevers of 1669, 71, and 72, which were for the moſt part of the nature of typhus, "eadem ipſa methodo tum quoad venæſectionem, tum "repetitas purgationes, febrem hanc aggreſſus ſum; quam in "dyſenteriæ curatione ſupra fuſius diximus."*

In the petechial fever, Hoffman obſerves, blood-letting is generally neceſſary if the patient is plethoric, and has been accuſtomed to this evacuation.

"And here firſt let me note," ſays Huxham, † that though "malignant and peſtilential fevers at the very onſet greatly "ſink the ſpirits, and cauſe ſurpriſing and ſudden weakneſs, "eſpecially when from contagion, yet, bleeding, to ſome "degree, is commonly requiſite, nay neceſſary in the ſtrong "and plethoric, not only to leſſen the moles movenda, and "give a freer play to the oſcillating veſſels; but alſo to pre-"vent any inflammatory obſtructions, which may form in "the very beginning, and likewiſe to moderate the friction "and heat, which are often very conſiderable in the firſt "days of the diſeaſe; and which more and more exalt the "ſalts and ſulphurs of the blood increaſing the acrimony "and putreſcent ſtate of the humours, and greatly favour "the action of the morbific matter." In the former part of this quotation, we ſee the practice of Huxham; and in the latter part, the foundation on which it reſted.

* See also his practice in the epidemics of the year 1665 and 66, during which time the plague infested London.

† Huxham on Fevers.

Evey body, ſays Haſſenohrl, lets blood in petechial fever, repeating the operation as often as the neceſſity of the caſe ſeems to require, or as the particular tenets of the phyſician incline him to do. In theſe fevers, he continues, the blood often ſhows the buffy coat, but in ſome, from the very beginning, it is fluid and diſſolved. "Ex his quoque conficitur," he adds, "inanem eſſe metum illorum, qui in febribus, ſic dictis malignis, manum ſemper a venæſectione temperandam eſſe contendunt; ne ſcilicet debilitatem, in principio morbi jam preſentem, augeant; *cum enim hæc debilitas, incipientibus morbis, frequentiſſime ortum ſuum debeat ſanguini ſpiſſo immeabili phlogiſtico*; clare eluceſcit phlebotomiæ adminiſtrationem in febribus continuis, nullis circumſcribi limitibus niſi conditione ægri, numero et vehementia ſymptomatum."*

The ſame opinion has been adopted to a greater or leſs extent by Dr. Mead,† Eller, Sir John Pringle, Dr. Grant, Dr. Donald Monro, &c.

Yet there are hardly any of theſe writers who did not occaſionally witneſs the bad effects of blood-letting in typhus. Thus Sydenham remarks, "Quoties mihi cum ægris res eſt, quorum ſanguis vel per ſe imbecilior exiſtit, (uti fere in pueris) vel juſta ſpirituum copia deſtituitur, ut in declivore ætate, atque etiam in juvenibus, diuturno aliquo morbo confectis, a venæſectione manum tempero." Hoffman confeſſes, that in many caſes of fever it is very difficult to determine whether or not we ought to have recourſe to blood-letting. The candour of Huxham ſupplies us with ample

* Haſenohrl's Historia Febris Petechialis.

† Although the state of the pulse seems to counter-indicate it, Dr. Mead observes, we must in general begin by letting blood in all continued fevers. "Sanguinis missione plerumque incipiendum est, etiamsi ex pulsu tenore vix indicari videatur."

proof of the impropriety of his own practice. " The firſt " blood," he obſerves, " in malignant fevers, frequently " appears florid, what is drawn twenty-four hours after " is commonly livid, black, and too thin, a third quantity " livid, diſſolved, and ſanious; this is frequently the caſe " in malignant fevers. I have ſometimes obſerved," he continues, " the craſis of the blood ſo broken as to depoſit a " black powder like ſoot at the bottom, the ſuperior part " being a livid gore, or a kind of a dark green and exceed- " ingly ſoft jelly. Beſides the pulſe in theſe caſes ſinks " oftentimes ſupriſingly after a ſecond bleeding, nay, ſome- " times after the firſt, and this I have more than once noted " to my great concern and aſtoniſhment, and that even where " I thought I had ſufficient indications from the pulſe to " draw blood a ſecond time.

In his Eſſay on the Ulcerous Sore-throat, the ſame author obſerves, " I have very often met with this buffy or ſizy ap- " pearance of the blood in the beginning of malignant fevers,* " and yet blood drawn two or three days after, from the " very ſame perſon, hath been quite looſe, diſſolved, and " ſanious as it were; too many inſtances of this lately oc- " curred to me among the French captives here, *who died by* " *dozens of a peſtilential fever. In this fever the French ſur-* " *geons bled every day, or every ſecond day, and I ſeveral times* " *ſaw the blood of ſome of the officers a mere ſanious gore on the* " *third or fourth blood-letting*

Huxham was led at length to ſee the impropriety of blood-letting in moſt caſes of typhus, and he confeſſes that in thoſe fevers which ariſe from contagion it is generally followed by

* From these and similar observations it appears, that the buffy coat sometimes covers the blood in cases where it neither indicates a repitition of the blood-letting, nor the propriety of having had recourse to it.

bad confequences. He offers the reafon of this in the following manner. " The contagion being diffufed through the " whole mafs of blood, you will little leffen it by drawing " off a fmall quantity of this fluid." On this paffage Dr. Moore * obferves, " The reafon here affigned for bleeding " not being indicated, is unqueftionably very ingenious; but " the reafon which makes the ftrongeft impreffion on my " mind for not bleeding in this fever, is fimply becaufe it " feems generally to do harm."

It is remarked by Sir John Pringle, that many have recovered from the jail fever without blood-letting, but very few who had loft much blood. Dr. Monro, who fays he was often obliged to give cordials to fupport the ftrength after blood-letting, is among the lateft of the foregoing writers. He endeavours to fupport his practice, lefs by his own experience, than the authority of Haffenohrl, who again fupports his, by opinions, fuch as thofe juft quoted from his works, refpecting the fuppofed vifcidity of the blood and the means of correcting it.

On reading fuch obfervations as thofe juft quoted, we are inclined to afk, what were the advantages expected from blood-letting in thefe fevers, that fuch confequences fhould have been rifked? To this queftion we have no anfwer but that which the favourite hypothefis of the time afforded, which taught, in oppofition to every day's experience, that the caufe of fever may be, as it were drained off by blood-letting.

It is true, indeed, that a few inftances may be collected, in which blood-letting feemed to be ferviceable in typhus. The moft remarkable inftance I have met with, is an epidemic, a fhort account of which, Dr. Donald Monro gives from Riverius; but nobody acquainted with the nature of

* Medical Sketches.

fever will regard ſolitary inſtances of this kind, as capable of influencing the concluſion, whichgeneral obſervation warrants. Singularities are conſtantly obſerved in particular epidemics, from which no inference can be drawn reſpecting fever in general.

There are many reaſons for believing that the epidemic deſcribed by Riverius was attended with ſome abdominal inflammation. Viſceral inflammations often exiſt, as diſſection has ſhewn, without being indicated by the uſual ſymptoms. This is particularly apt to happen in fevers. It happened frequently, for inſtance, in the fever of Grenada, deſcribed by Dr. Chiſholm; and in that of Philadelphia, deſcribed by Dr. Ruſh, and may account for the practice which was found moſt ſucceſsful in them. Quarin, De Haen, Bartholine,* Van Swieten, Sir J. Pringle, Silvius de la Boe † and other writers mention ſimilar inſtances.

It has been maintained in a late learned work on Fever, ‡ that this diſeaſe always conſiſts in an inflammatory ſtate of the brain. Could this opinion be ſupported, the practice of blood-letting in typhus might be defended on rational principles. I have, in the Edinburgh Medical and Surgical Journal, ‖ pointed out the reaſons which appear to me concluſive againſt this opinion.

To the ſtate of increaſed excitement, whatever be the mode of treatment, if the fever laſts above a few days, always ſucceeds that of debility. The action of the heart and larger veſſels now falls below, as in the firſt ſtage of fever it

* Barthol. Hist. Anat. Rar. Hist. 56.

† Prax. Med. Append. Tract. X.

‡ An Inquiry into the Seat and Nature of Fever, by Dr. Clutterbuck.

‖ Vol. IV. page 20.

rifes above the healthy degree. If we cannot permanently increafe it, the debility of the capillaries increafing with that of the central parts of the vital fyftem, the powers of life are at length loft in the former, and death gradually extends to the centre.

We endeavoured to increafe the power of the fanguiferous fyftem,

1. By an attention to diet, as far as the ftate of the digeftive organs will admit of it;

2. By the application of cold as far as the temperature of the fkin warrants it; and,

3. By the ufe of ftrengthening medicines.

1, In the more fevere cafes of typhus, the powers of digeftion are wholly fufpended, and the only effect of food, if the patient could be made to take it, would be to oppref the ftomach. In the typhus mitior thefe powers continue, though much impaired, and fome attention to diet is proper.

The food fhould be mild, nourifhing, eafy of digeftion, and given frequently and in fmall quantity. It fhould confift chiefly of frefh fruit, the farinaceous vegetables, and bread. No kind of animal food is proper while a tendency to exacerbations continues. "Even after the difeafe" Dr. Fordyce obferves "has been terminated by a crifis, animal food in a "folid ftate fhould be rejected, there being no caufe which "has produced relapfes, as far as the author's experience has "gone, fo frequently as ufing folid animal food too foon."

The diet here fhould not, as in fynocha, confift chiefly of liquids, which, without the admixture of fome folid matter, are very imperfectly digefted. I have found from repeated trials, that even the ftrongeft beef tea given alone, and when the ftomach is perfectly healthy, will neither afford requifite

nourifhment, nor allay the calls of hunger, in whatever quantity it may be taken. But if mixed with any folid matter, although much lefs nutritious, it becomes fufficiently fo.

It is of great confequence in all kinds of typhus not to permit the ftomach to remain long empty. If its ftate does not admit of any kind of food, fome liquid more or lefs ftimulating fhould be frequently given; but I fhall not enter on the ufe of wine as an article of diet, as it will prefently be neceffary to treat of it at length as a medicine.

2. The application of cold at the various periods of fever has already been confidered.

3. We come now to that part of the treatment of fever, the knowledge of which appears the moft defective, the beft writers differing fo much refpecting fome of the means employed in it, as to lay down diametrically oppofite rules of practice. While all feem agreed with refpect to the propriety of ufing the medicines ftrictly termed tonic in typhus, they differ widely refpecting thofe to which the name of ftimulant has been more exclufively applied. The chief of thefe are opium and wine.

I have already had occafion to make fome obfervations on the ufe of opium in fever, as a means of allaying irritation and procuring fleep. It has alfo been employed in typhus for the purpofe of increafing the action of the heart and blood veffels. Some have recommended it for this purpofe in very large dofes, and there is reafon to believe that it would have been more generally ufed with this view, were it not that we have in wine, means of producing the fame effect, in many refpects lefs objectionable; and phyficians feem now to be every day more and more confining the ufe of opium in

fevers to the purpofes of which I have already treated. But many equally object to increafing the action of the heart and blood veffels in the fecond ftage of fever by wine.

It is but lately that wine has been given with freedom in any kind of fever. Sydenham, and his cotemporaries made but little ufe of it. Since his time the practice of giving it in typhus has been gradually gaining ground, but the reader will find by confulting the works of Hoffman, Boerhaave, Van Swieten, Huxham, Mead, De Haen, Hasenohrl, Eller, Pringle, Monro, &c. that the beft writers till within the laft 30 or 40 years, fpeak of its employment with great caution.

Dr. Cullen is among the first who recommended it in large quantity. Dr. Brown and his followers advifed a ftill freer ufe of it, and of late it has not been uncommon for two bottles of the ftronger, and three or even four of the lighter wines to be drank in twenty-four hours, by thofe labouring under certain fpecies of fever.

The prejudices of the earlier writers appear to have contributed to this, furely exceffive ufe of wine; for later phyficians finding, that it might in many cafes be given to much greater extent than they advife, not only with fafety, but advantage, imagine that the caution of their predeceffors was wholly unfounded; and feem to regard wine as a fpecific in all fevers, in which the excitement falls below the healthy degree. The ill fuccefs which often attends the injudicious ufe of wine in fever, has, on the other hand, led fome phyficians of eminence, altogether to doubt its beneficial tendency in this difeafe, and they have nearly banifhed it from their practice.

Such is the prefent ftate of medical opinion on a point of the firft importance. After reading all that has been written on the fubject, the phyfician finds himfelf left to his own ob-

ſervation to determine, whether he is to place his chief reliance on wine in the treatment of typhus, or to ſhun it as always injurious in this diſeaſe.

The following remarks are the reſult of pretty extenſive experience, and if not of accurate, at leaſt of anxiouſly attentive obſervation. For the laſt thirteen years, I have practiſed in a county peculiarly ſubject to fever, where I have not only ſeen many patients, who were from the commencement of the diſeaſe under my own care, and conſequently afforded me opportunities of obſerving the effects of the plan which appeared to me the beſt; but from the practitioners of the ſmaller towns, whoſe attention is neceſſarily divided among all the branches of the profeſſion, occaſionally requeſting the aſſiſtance of the phyſician in the more ſerious medical caſes, I have had an opportunity of comparing the effects of different modes of practice.

As far as I can judge from what I have ſeen of the uſe of wine in fever, the difference of opinion which prevails on this ſubject, has in a great degree ariſen from phyſicians having attempted to apply their rules, either for or againſt it, to all caſes indiſcriminately. Whereas, it would appear that the uſe of wine in typhus muſt be almoſt as much regulated by circumſtances, as that of blood-letting in ſynocha. Two general obſervations, however, appear to me to be warranted, that more or leſs wine is beneficial in all caſes of typhus, and that there are few, in which very large quantities are not injurious.

When we ſee a patient labouring under ſymptoms of extreme debility, and find them almoſt uniformly relieved by a large quantity of wine, it is difficult at firſt view to perſuade ourſelves that it can be pernicious. But an attentive obſerver will look beyond its immediate effects, and will often ſee ſufficient reaſon to doubt the ſafety of carrying this practice

very far. He will find that the temporary excitement he thus procures, is frequently ſucceeded by a greater degree of debility, than that which the ſtimulus had removed; and if he perſeveres in the practice under ſuch circumſtances, the pulſe upon the whole will gradually become more frequent and feeble till it ceaſes altogether. Theſe effects I have often witneſſed.

Phyſicians have alſo been led to an exceſſive uſe of wine in typhus by the comparatively ſmall effects it produces. That a pint of wine in typhus does not produce a greater effect than a glaſs in health, is adduced as an argument, for the pint in the one caſe, being as innocent as the glaſs in the other; but it is to be recollected that wine in typhus only produces leſs excitement than in health, in proportion as the remaining excitability is leſs; and conſequently, that a degree of excitement which would occaſion little or no inconvenience in health, may produce a fatal exhauſtion in typhus. Here there is no excitability to ſpare, and one of the firſt principles of the treatment ſeems to be, as much as poſſible to prevent its exhauſtion. A moderate and uniform exhibition of ſtimuli ſeems often neceſſary, that the action of the central parts of the ſanguiferous ſyſtem may not fall too low to ſupport that of the extreme parts. All excitement beyond this appears to have no other effect, but that of exhauſting the vigour which yet remains.

The proper quantity of wine is to be determined by an attention to the following circumſtances.

The degree of the debility, and the nature of the ſymptoms.

The ſtage of the fever, and the time it has laſted.

The nature of the cauſe which produced it.

The age and conſtitution of the patient.

His habits of living, and former diſeaſes.

The climate, ſeaſon, and particular ſituation in which the diſeaſe appears.

The effects of the wine.

When the debility is inconſiderable, I believe the quantity of wine uſed in fevers ſhould be very ſmall, and it ſhould be given diluted. In proportion as the debility is greater, we may cautiouſly increaſe the quantity, recollecting, however, that it is not our object ſuddenly to correct the ſymptoms of debility, much leſs to occaſion any conſiderable degree of excitement, but to afford ſuch ſupport to the vital organs as ſhall tend to prevent an increaſe of debility; and in more ſevere caſes, to relieve the ſymptoms of immediate danger. Thoſe caſes of typhus which are accompanied with petechiæ, and a tendency to gangrene, ſeem to call moſt for the uſe of wine; and thoſe in which the ſkin is ſoft and inclined to be damp bear it beſt.

If very large quantities of wine are ever proper in fever, it appears to be when extreme debility comes on very rapidly. In the ſame degree of debility coming on more ſlowly and conſequently at a later period of the diſeaſe, there is leſs proſpect of advantage from them. If the ſecond ſtage of fever has laſted for ſome time with little increaſe of debility, wine ſhould be uſed with great caution.

There is every reaſon to believe that fevers from contagion bear wine better than thoſe from other cauſes, eſpecially if the patient is ſtill expoſed to a highly contagious atmoſphere.

The doſe of wine muſt in ſome degree be regulated by the patient's age and conſtitution. In old age and weak habits, the ſymptoms requiring the uſe of wine are of courſe moſt apt to appear, and the ſame degree of debility indicates a freer uſe of it, becauſe in them debility is moſt apt to increaſe rapidly, and produce ſymptoms of danger.

The more the patient has been accuſtomed to a free uſe of

fermented liquors, the leſs will be the effect of the ſame quantity of wine in fever. Thoſe who have been long accuſtomed to a very ſimple diet, making little uſe either of fermented liquors or animal food, are very ſenſible to the ſtimulus of wine in this diſeaſe. Such as have been ſubject to former attacks of typhus or other diſeaſes of debility, are more liable to the ſymptoms requiring it, than thoſe whoſe previous diſeaſes have been of an inflammatory nature.

The climate, ſeaſon, and even the particular ſituation in which the diſeaſe appears, ſhould influence the uſe of wine in typhus. As in ſultry climates the changes in fevers are rapid, they often demand more powerful ſtimulants than are uſually proper in the fevers of temperate climates. In the latter, the tendency to debility is greater in autumn than in ſpring, and the moderate uſe of wine, therefore, more generally neceſſary; and caſes of that extreme debility which ſeem to call for a freer uſe of it, more frequently occur in the latter ſeaſon. In certain ſituations of the ſame country, diſeaſes tend more to debility than in others. In towns which lie low, and in which the inhabitants are crowded, fevers are found to require the uſe of wine more than in higher ſituations, and in the country. This difference is ſtrikingly exemplified, even in different parts of Worceſterſhire. In Worceſter and Kidderminſter for example, it is neceſſary to make a freer uſe of wine in fevers, than on or near the Malvern and Broadway Hills.

The effects of the wine muſt be carefully watched. If it quickly, and to any conſiderable degree raiſes the pulſe, we may be aſſured that we are giving too much. If we find that its effects are tranſitory, if ſoon after the cordial effects of each doſe, ſinking and debility return, we ſhall ſeldom gain much ground by its uſe, and by increaſing the doſe we ſhall generally accelerate the fatal termination. When on the other hand, the wine without appearing to produce any very remark-

able degree of excitement at the time it is taken, ſeems more permanently to relieve the ſymptoms of debility, we may with confidence expect advantage from it. But we muſt be cautious how we venture to increaſe the quantity which has this effect. When our patient is upon the whole improving, this ſhould ſatisfy us. If we attempt to accelerate his recovery by increaſing the wine, we ſhall often do harm.

Various other fermented liquors have been uſed as ſubſtitutes for wine, the beſt of theſe appear to be cider and perry. Theſe are neither ſo oppreſſive to the ſtomach as malt liquor, nor do they afford ſo hurtful a ſtimulus as diſtilled ſpirits which, diluted or defended in whatever way, as I have obſerved from many trials, never produce the invigorating effects of the fermented liquors which have not been diſtilled.

The vitriolic and nitrous ethers have been much recommended in typhus. To the free uſe of ether nearly the ſame obſervations apply as to that of diſtilled ſpirits. It is often uſed with advantage in ſmall doſes as an antiſpaſmodic.

It is not many years ſince it was a common practice to employ bliſters as a ſtimulus in typhus, and many of the older practitioners ſtill employ them with this view. Of their uſe in fevers, I have already had occaſion to ſpeak. Their general ſtimulant effect appears to be trifling, and perhaps hardly ever compenſates for the irritation and trouble they occaſion. Dr. Cullen juſtly obſerves, that the general ſtimulating effects of bliſters muſt be inconſiderable, ſince they are found of ſo much ſervice in caſes of local inflammation.

To the head of tonics belong the various aſtringents, bitters and aromatics, and the mineral and vegetable acids.*

* Iron has seldom been employed in fevers except towards their decline when symptoms of dyspepsia come on.

Of these medicines, the most celebrated is the bark. It differs from fermented liquors in its stimulus being less powerful but more permanent; and in its being not at all nutricious. It is even probable from some observations related in speaking of intermitting fever, that it is either not received into the mass of blood, or although in part received, its effects are chiefly to be attributed to its action on the stomach and intestines. On the muscular fibre the bark seems to exert but little power; its immediate action appears to be on the nerves, through which its invigorating effects are diffused to other parts of the system.

Most of the authors I have had occasion to mention used the bark in fevers with more freedom than wine. De Haen gave an ounce of the extract daily in malignant fevers; and, in the first volume of his Ratio Medendi, relates cases to prove its efficacy. Huxham gave it in decoction with aromatics and a small quantity of distilled spirits; and Hasenohrl is one of its strongest advocates. "Supervacaneum quidem est," he observes, "aliquid addere quod egregium corticis Peruviani virtutem in febribus admodum malignis demonstret."*

We found in treating of intermittents, that wherever the inflammatory diathesis is considerable, blood letting is necessary previous to the exhibition of the bark. Some practitioners, losing sight of the circumstances which gave rise to this practice, seem to have regarded venesection previous to the exhibition of the bark as necessary in all cases of fever. In consequence of which it has sometimes been very improperly employed. Dr. Cullen justly remarks, in his Materia Medica, that wherever blood letting is proper in continued fever, the bark is always prejudicial.

But the prejudice that chiefly opposed the use of the bark

* Hasenohrl's Historia Febris Petechialis.

in this fever, and which alſo originated from the practice found moſt ſucceſsful in agues, was that it would not ſucceed unleſs there were evident remiſſions.* This obſervation is juſt if it be confined to thoſe fevers in which the ſymptoms of ſynocha prevail; but in typhus the continued form of the diſeaſe does not forbid its uſe. I had occaſion to obſerve, in ſpeaking of the treatment in agues, that, although where the excitement is conſiderable, the bark is only to be exhibited in the abſence of fever, and that where the inflammatory diatheſis exiſts, its exhibition is to be delayed altogether, till this diatheſis is removed; yet in other caſes, particularly where the debility is conſiderable, the incompleteneſs of the remiſſions only indicates the neceſſity of uſing the bark more freely: and it may now be obſerved, that under the latter circumſtances, although the fever be of the continued form, the bark is to be given, though generally, in ſmaller doſes. It is true indeed, that where there are no remiſſions we do not expect it to ſtop the fever; but it tends to obviate the ſymptoms of debility and ſhorten the diſeaſe.

While any degree of the ſynocha prevails the bark is hurtful, and even about the time of the change from the ſynocha to the typhus, I have found the lighter bitters, the colomba, the ſerpenteria, the caſcarilla or gentian better than the bark; which if given at this period, is apt to recall the ſymptoms of ſynocha. But after the typhus is fairly formed, that is, after the pulſe remains weak during the exacerbations, more or leſs bark is always perhaps uſeful; and when ſymptoms of malignity, and particularly that tendency to gangrene ſo frequent in the worſt forms of typhus, appear, the largeſt quantity the ſtomach will receive is neceſſary.

* Dr. Grant's Treatise on Fevers and other works which I have had occasion to mention.

In thefe cafes it is adviſeable to give it in ſubſtance if the ſtomach will bear it. In milder cafes the infufion is ſufficient, and, being lefs apt to oppreſs the ſtomach, ſhould be preferred.

It is always proper to combine with the bark, in whatever form it is given, ſome of the mineral acids. I have already had occaſion to ſpeak of aceſſent fruit and other vegetable acids as beneficial in all kinds of fever. In many eaſtern countries the natives truſt the cure of malignant fevers chiefly to what we ſhould call an exceſſive uſe of lemon juice. Peppermint, cloves, cardamoms, and other aromatics are occaſionally added to the bark and other bitters, to increaſe their ſtimulating quality, and render them more grateful to the ſtomach.

The mineral acids may be given much earlier in fever than either the bark or wine. As ſoon as the ſymptoms of ſynocha begin to abate, they ſhould be mixed with the drink; and as the typhus comes on, given very freely. Till lately the ſulphuric acid has been chiefly employed; moſt phyſicians now prefer the muriatic. The nitric acid has not been much uſed in fevers. Analogy is in its favour, eſpecially when bilious ſymptoms predominate.

A new ſtimulus has been introduced into the treatment of typhus by Weſt India practitioners, and from the trials which have been made with it, there is reaſon to believe that it will prove a valuable medicine, though probably better adapted to warm than temperate climates. Dr. Wright, in his report reſpecting the yellow fever of the Weſt Indies, in the 2d vol. of Annals of Medicine, obſerves, "We did not, however, deſpair; we gave capſicum pills with the moſt marked "ſucceſs, and even where melæna or the black vomit had "taken place, the capſicum has ſnatched the patient from the "moſt imminent danger." Others have made ſimilar obſer-

vations. The benefit derived from the capſicum in the cynanche maligna ſuggeſted its exhibition in typhus, and affords as ſtrong an argument in favour of the practice as analogy can ſupply.

There is a claſs of medicines, whoſe ſtimulus ſeems particularly calculated to remove that ſtate of debility, which is attended with ſpontaneous contractions of the muſcles of voluntary motion, occaſioning ſubſultus tendinum, and other involuntary motions of the trunk and limbs; the chief of theſe are ether, opium, muſk, camphire, caſtor, and ammonia. All of which have been regarded as powerful medicines in typhus.

Of ether and opium, I have already had occaſion to ſpeak; and if we eſtimate the value of the others by the general opinion of practitioners, we ſhall find them fall much ſhort of the encomiums which ſome have beſtowed on them. Of theſe, camphire, on which Huxham placed much reliance, is the moſt uſeful in fevers; in ſmall doſes it often has a conſiderable effect in allaying reſtleſſneſs and anxiety, and does not interfere with the exhibition of more powerful medicines. The miſtura camphoræ is often a good vehicle for the bark in typhus.

Camphire* combined with opium forms perhaps the moſt powerful medicine we poſſeſs in obſtinate vomiting, which both on account of its debilitating effects, and becauſe it prevents the exhibition of medicines, is always an alarming ſymptom.†

* Dr. Lysons gave large doses of camphire with nitre at the commencement of fevers, and when, with the assistance of a little white wine whey, it succeeded in exciting the action of the skin, it seemed frequently to be of great service.

† Saline draughts given in the state of effervescence or a mixture of the sulphuric acid, conserve of roses, and peppermint water strained, also frequently allay this symptom.

The ammonia and muſk have been chiefly recommended when the low delirium, characteriſtic of typhus, has ſupervened; and in ſuch caſes they often afford relief, but their effects are tranſitory.

In extreme typhus the circulation, being comparatively ſlow, the increaſed frequency, not compenſating for the greater feebleneſs of the ſyſtole of the heart and arteries, the blood paſſes leſs frequently through the lungs, and conſequently is leſs ſubjected to the action of the oxygenous part of the atmoſphere than in health. Hence probably its darker colour. The effects of the leſs frequent paſſage of the blood through the lungs would probably, as far as reſpects the change occaſioned by the oxgenous part of the atmoſphere, be counteracted by ſupplying the patient with air containing a larger quantity of oxygen, in proportion as the circulation is leſs rapid. What effect correcting the venous ſtate of the blood in typhus might have, it is difficult to ſay.

If we contemplate the change which has been taking place in the treatment of fevers during the laſt fifty years, we ſhall find, that phycians have been gradually diminiſhing the number of their medicines, and increaſing the doſes of thoſe they retained. In proportion as it has been rendered leſs complicated, it has become more efficacious.

CHAP. V.

Of the Varieties *of* Continued Fever.

Continued fever, or, as it has been termed, Synochus, is according to the arrangement I adopt, divided into five varieties; the Synochus Simplex, unaccompanied by any eruption, the Synochus Petechialis, the Synochus Miliaris, the Synochus Aphthosus, the Synochus Erysipelatosus, and the Synochus Vesicularis.

The synochus simplex has been considered. I am now to point out the circumstances in which the other varieties differ from it.

SECT. I.

Of the Petechial Fever.

The Synochus Petechialis may be defined,

Synochus, incerto morbi die, plerumque post varia debilitatis signa, apparent maculæ parvæ, rubræ, circulares, minime eminentes per cutem, præcipue colli et pectoris, sparsæ.

There is little to be added to what has already been said of this variety of synochus. Petechiæ * seldom appear in the first, very frequently in the second, stage of synochus. They are most apt to appear where there is a tendency to the hemorrhagies characteristic of this stage.

* See the Section on the Symptoms of Typhus.

This eruption ſometimes accompanies other diſeaſes, particularly ſcurvy, and is ſometimes idiopathic. We ſtill, however, find it accompanied with a tendency to the worſt forms of hemorrhagy.

All that is known of its cauſes is, that whatever debilitates, diſpoſes to it. It nevertheleſs ſometimes appears when the excitement is conſiderable;* and on the other hand, we often meet with extreme debility in fevers, as well as other diseaſes, unattended by petechiæ.

As petechiæ generally denote debility, their appearance in typhus indicates a ſtrict attention to the invigorating plan; and antiphlogiſtic meaſures ſhould be employed with caution when they ſhew themſelves in ſynocha.

When petechiæ appear as an idiopathic affection, tonic and aſtringent medicines are indicated, the bark, port wine, ſulphuric acid, and alum are the beſt. It will be neceſſary to conſider the other varieties of ſynochus at greater length.

SECT. II.

Of the Miliary Fever.

THE Miliary Fever is defined by Dr. Cullen,

"Synochus cum anxietate, frequenti ſuſpirio, ſudore "olido, et punctionibus cutis. Incerto morbi die, erumpunt "papulæ rubræ, exiguæ, diſcretæ, per totam cutem, præter "faciem, crebræ, quarum apices, poſt unum vel alterum diem, "puſtulas minimas, albas, brevi manentes, oſtendunt."

* See Eller de Cognosc. et Cur. Morb. Dr. Grant's Treatise on the Fevers most common in London, &c.

It appears from what was ſaid of this fever in the Introduction that it is to be regarded only as a variety of ſynochus, characterized by a particular eruption, and a certain train of ſymptoms which attends that eruption, whether it appears in fever or other diſeaſes. In laying down the ſymptoms then of what has been termed Miliary Fever, it will be the moſt diſtinct plan, in the firſt place, to deſcribe the eruption; ſecondly, to enumerate the ſymptoms which generally precede or attend it; and laſtly, to point out the febrile ſtates in which it is moſt apt to appear.

1. Of the Symptoms of the Miliary Fever.

Of the Miliary Eruption.

This eruption is ſometimes preceded by a roughneſs of the ſkin, resembling that produced by cold. It conſiſts of a number of ſmall red puſtules, about the ſize of millet ſeeds, from which they are termed miliary. They often loſe their rednefs, and appear of the ordinary colour of the ſkin. Their prominence is ſo inconſiderable that it can ſcarcely be ſeen; to the touch it is always ſufficiently evident. For the moſt part they are diſtinct, now and then in cluſters. After they have remained for ten or twelve hours, or longer, a ſmall veſicle appears on the top of each, which is at firſt of a whey colour, but ſoon after becomes white.*

Such is the appearance of the white miliary eruption, and

* The matter of the pustules at first appearing of a whey colour and afterwards white has given rise to a very improper division of the white miliary eruption into pellucid and white. See the 388th paragraph of Burserius's Institut. Med. Pract where the reader may also see some other divisions of the miliary eruption which are equally useless.

the red only differs from it in the puſtules retaining their red colour, and the matter formed in them being yellow.

In two or three days the veſicles break, if they have not been rubbed off, and in either caſe are ſucceeded by ſmall cruſts, which fall off in ſcales.

The miliary eruption generally firſt appears about the neck and breaſt, gradually ſpreading to the trunk and extremities, but rarely appearing on the face. The white and red eruptions for the moſt part appear ſeparately; ſometimes they are intermixed. In both, the matter formed in the veſicles, has an offenſive ſmell, and, it is ſaid, a very acrid taſte.

The miliary, like other ſymptomatic eruptions, often appears repeatedly in the courſe of the diſeaſe, and it is not uncommon for one crop immediately to ſucceed another for many days; new puſtules appearing while the former advance to maturation and decline.

We are aſſiſted in forming the prognoſis in Synochus Miliaris, by the appearances of the eruption. The red generally indicates a milder diſeaſe than the white; and it is frequently obſerved, that the greater the inflammation that attends the eruption, the better is the prognoſis.* Quarin,† however, remarks, that both kinds of miliary eruption appearing at the ſame time, indicates a worſe diſeaſe than either ſingly. The ſame may be ſaid of a very numerous eruption compared with a ſcanty one. The eruption being ſteady is more favourable than its frequently diſappearing and coming out again; ‡ and it is better that when the places covered with the eruption ſhould appear ſwelled and ſtretched, than ſunk and flaccid.

* Mead's Monita et Præcepta Medica.

† De Febribus.

‡ Burserius.

The prominence of this eruption ſufficiently diſtinguiſhes it from petechiæ. The circumſtances which diſtinguiſh it from other eruptions will be pointed out as we proceed in deſcribing them. *

Of the Symptoms which precede or attend the Miliary Eruption.

It is not uncommon for the fever, a ſhort time before the miliary eruption ſhews itſelf, to ſuffer an evident exacerbation, which appears chiefly in an increaſe of temperature and reſtleſsneſs. The eruption is generally preceded by depreſſion of ſpirits, and a ſenſe of tightneſs about the præcordia, the breathing becoming laborious, and being interrupted with ſighing or cough.†

With the increaſe of temperature, there is frequently a ſenſe of pricking or itching in the ſkin, which is alſo ſometimes felt in the bowels,‡ and is now and then accompanied with a degree of numbneſs in the extremities, particularly in the fingers ;§ For ſometime before the eruption comes out, the patient is generally bathed in a profuſe ſweat of a ſour, rank odour, during which the pulſe is often contracted.

It is ſometimes preceded by pains of the head or internal ear, or tinnitus aurium, and now and then by delirium ; ſometimes by pains in the back, limbs, and loins,‖ or a peculiar ſenſe of pungent heat referred to the back. Sometimes the belly becomes ſwelled and tenſe ; at other times there is a ſwelling and redneſs of the face,¶ the eyes appearing inflamed or watery.** The internal fauces alſo are frequently

* The white miliary eruption has been termed purpura alba ; the red, purpura rubra.

† Quarin. ‡ Vogel. § Allionius. Vogel.

‖ Quarin. Vogel. ¶ Burserius. ** Quarin.

inflamed, and there is now and then a conſiderable flow of ſaliva. In many caſes it is preceded by aphthæ, (there is often, we ſhall find, an evident connection between these eruptions), and ſometimes, though very rarely, by an epileptic fit.*

Upon the whole, dejection of ſpirits and anxiety, with unuſually fetid ſweats, are the moſt common forerunners of the miliary eruption.

Moſt of the foregoing ſymptoms are relieved on its appearance. The ſweating, however, if means are not uſed to check it, for the moſt part continues, and then freſh crops of the eruption will probably continue to come out for many days.

The more ſevere the preceding ſymptoms, and particularly the greater the debility and depreſſion of ſpirits, the more unfavourable is the prognoſis. If the ſweat is moderate, and the reſpiration free, the prognoſis is generally good. Itching, inſtead of the ſenſe of pricking, on the coming out of the eruption, has been regarded as unfavourable.†

The miliary eruption ſometimes appears unattended by fever. Even in this caſe it is often preceded by reſtleſſneſs, ſickneſs, anxiety, and a ſenſe of ſinking; and accompanied by ſweating, or a watery diſcharge from the bowels or kidneys, and ſometimes by ſalivation.‡

The red miliary eruption, the raſh as it is vulgarly termed, more frequently appears unaccompanied by fever than the white. "The miliary glands of the ſkin," Huxham remarks, "appear very turgid, and mimic a raſh upon profuſe ſweating, even in the moſt healthy."

* Burserius. † Burserius. ‡ Hoffman.

Of the Febrile States in which the Miliary Eruption moſt frequently appears.

This eruption is moſt apt to ſhew itſelf when debility prevails. That ſpecies of ſynochus, therefore, of which typhus forms the principal part, is moſt frequently accompanied with it; and in the works of thoſe who treat of the miliary fever as a diſtinct diſeaſe, and conſequently endeavour to point out its characteriſtic ſymptoms, thoſe are enumerated which have been mentioned as attending this ſpecies of ſynochus.

The cold ſtage, it has been obſerved, is generally very evident, often attended with conſiderable langour and depreſſion of ſpirits, ſometimes with ſyncope. The pulſe during the chills is for the moſt part very ſmall and weak; after the heat is generally diffuſed, it becomes ſtronger and fuller; but never, it is obſerved, acquires a great degree of ſtrength, and generally in a few days becomes ſmall, ſoft, and depreſſed. The various ſymptoms denoting much debility, ſuch as tremors, cramps, ſubſultus tendinum, delirium, &c. enumerated among the ſymptoms of typhus, have been regarded as characteriſtic of this fever. When we conſider the nature of the fever, the irritation of the eruption, and the profuſe ſweats which attend it, it will not appear ſurpriſing that theſe ſymptoms very frequently accompany the Synochus Miliaris.

Such is the diseaſe which has been termed the Miliary Fever. In what does it differ from other caſes of typhus, except in the eruption and certain ſymptoms connected with it, which, as will be evident in conſidering its cauſes, are accidental appearances, that may often be prevented by a proper mode of treatment?

Some alledge that the miliary eruption generally ſhews itſelf on a certain day of the fever, demonſtrating an eſſential

connection between the fever and eruption. Allionius ſays that it appears on the third or fourth day; Huxham ſays it appears on the ſeventh, ninth, or eleventh; and other days are mentioned by other writers; from which it is ſufficiently evident, and practitioners indeed now admit, that it may appear on any day; it is not common, however, for it to appear before the third or fourth day, probably becauſe the debility is ſeldom conſiderable before this period.

The foregoing obſervations apply chiefly to the white miliary eruption, the form in which it generally appears in typhus. The red, I have had occaſion to obſerve, is a ſlighter affection, and often appears in ſynocha. Even here, however, it is generally attended with oppreſſion and ſinking of the ſpirits.

The ſymptoms connected with the miliary eruption for the moſt part ſuffer a remiſſion on its appearance, and in ſome inſtances there is alſo an abatement of the febrile ſymptoms;* in general, however, the eruption, and the ſweats and other ſymptoms that attend it, only increaſe the debility, and we ſhall find that they are always, if poſſible, to be prevented. An increaſe of the ſymptoms of debility, on the coming out of the eruption, affords an unfavourable prognoſis; but the prognoſis is ſtill worſe, if ſuch ſymptoms ſhew themſelves or ſuffer a conſiderable exacerbation on its ſudden diſappearance. When in this caſe, exceſſive anxiety and dejection, ob-

* Quarin obſerves, that it is chiefly in catarrhal and rheumatic fevers that the miliary eruption brings relief. Sweats, however induced, more frequently bring relief in these, than in most other febrile diseases. But as Planchon (in his Dissertation sur la Fievre Miliaire) justly remarks, when this eruption does relieve the fever, the favourable change is not to be depended on, the symptoms often returning with equal and sometimes greater violence.

ſtinate vomiting, delirium or convulſions ſupervene, the danger is very great.

Dropſical ſwellings of the legs and ſometimes of the belly are apt to ſupervene on miliary fevers, and are regarded by ſome as part of the diſeaſe; they ſeem, however, merely the conſequence of debility. For the moſt part as the patient gains ſtrength, the ſwellings diſappear without the aſſiſtance of medicine, eſpecially if they are merely anaſarcous. In ſome caſes they are ſuddenly removed by a ſpontaneous flow of ſweat. We ſhall ſoon have occaſion to conſider a ſpecies of eruptive fever, the ſcarlatina, almoſt uniformly ſucceeded by anaſarcous ſwellings.

From the great debility which prevails in the ſynochus miliaris, it is liable to be followed by the various conſequences of protracted fevers. See the obſervations of Vogel and Burſerius on the conſequences of the miliary fever.

2. Of the Cauſes of the Miliary Fever.

A fever, ſays Allionius,* which may be conſidered a new diſeaſe from the miliary eruption which attends it, in which, if the eruption ſubſides, the patient falls into convulſions and ſoon expires, appeared at Leipſic about the middle of the laſt century. And the generality of writers agree with Allionius, that the miliary fever which appeared at this place in the years 1652, 1653, and 1654, is the firſt fever of this kind of which we have any account.

The eruption firſt ſhewed itſelf in the fever which frequently attacks women after delivery, termed puerperal; but ſoon ſpread, and appeared in various fevers, attacking perſons of every age and ſex. "Ita ut," ſays Allionius, "pueros

* See his Tractatio de Miliarium Origine, &c.

"cum juvenibus, adultos cum ſenibus, viros cum fœminis, "aggrediretur."

Many, however, doubt of the miliary fever having appeared at this period for the firſt time. "It ſeems to me very im-"probable," Dr. Cullen obſerves, "that this ſhould have been "really a new diſeaſe when it was firſt conſidered as ſuch; "there appeared to me very clear traces of it in authors who "wrote long before that period, and if there were not, we "know that the deſcriptions of the ancients were inaccurate "and imperfect, particularly with reſpect to cutaneous affec-"tions; whilſt we know alſo very well that thoſe affections "which uſually are ſymptomatic, were commonly neglected "or confounded together under a general appellation." Burſerius thinks, that the miliary eruption has been confounded with petechiæ by ſome of the older writers; and Mr. White, in his Treatiſe on Pregnant and Lying-in Women, obſerves, that it is highly probable, that the miliary fever has occurred to practitioners ever ſince the days of Hippocrates. The reader will find, in Planchon's Treatiſe ſur la Fievre Miliaire, quotations from Hippocrates and Ætius, to prove that the miliary fever was known to these authors. This diſpute is of little moment.

In ſpeaking of the cauſes of ſynochus miliaris, we muſt take the ſame view of the diſeaſe as in enumerating its ſymptoms, endeavouring to trace the cauſes, not of the fever, but of the eruption which attends it.

There is no ſymptom which more conſtantly attends the miliary eruption than ſweating, and the cauſes of both are often the ſame; thus it frequently happens in the ſame epidemic, that in thoſe treated with the cool regimen there is neither ſweat nor eruption; while in others, treated with the hot regimen, ſweats are forced out, and the eruption ſoon makes its appearance. Sweating, indeed, is ſo frequently ac-

companied with this eruption in febrile diſeaſes, that Dr. Cullen regards it merely as a diſeaſe of the ſkin, produced by heat and forced ſweats,* and little connected with the general affection of the ſyſtem; this opinion he thinks is further confirmed by the eruption never appearing on the face, by its appearing chiefly on thoſe parts which are moſt covered, and by its being poſſible to bring it out on particular parts by external applications.

It is certain, however, that in ſome fevers, as in the puerperal, it is more frequent than in others.

Dr. Cullen remarks, "that of perſons ſweating under "febrile diſeaſes, thoſe are eſpecially liable to the miliary "eruption who have been previouſly weakened by large eva-"cuations, particularly of blood." Quarin and others make the ſame obſervation; thus it probably is that lying-in women are more frequently attacked by it than others. Thoſe alſo who have laboured under frequent and copious menſtruation, or a long continued fluor albus, are frequently ſubjects of it. It has often been remarked, that it is apt to appear in fevers ariſing from wounds, where the loſs of blood has been conſiderable.

Every debilitating cauſe, as well as loſs of blood, predispoſes to it. In lying-in women, it often makes its appearance before delivery. The interruption as well as exceſs of any habitual diſcharge, ſuch as that of the menſes, even habitual coſtiveneſs, is ranked among its cauſes. A bad diet, from a deficiency either in quantity or quality, or intemperance, prediſpoſes to it; to this cauſe, and alſo to exceſſive venery,

* Even in the writings of foreign authors, who generally contend for the miliaria being an exanthema, and particularly in those of Vogel and Quarin, there is sufficient proof of the miliary eruption being generally the consequence of forcing out sweats by warmth and stimulating medicines.

it is attributed both by Hoffman and Planchon; even the debility produced by a damp atmofphere feems fufficient to give the predifpofition. Quarin fays, it is often epidemic in marfhy countries.

Perfons of a lax habit of body, and fanguine temperament are moft fubject to it; children more than adults; old people than fuch as are in the vigour of life; women more than men; and thofe who have formerly laboured under the difeafe, are more fubject to it than others.

Though the caufes of the miliary fever, Hoffman obferves, have always exifted, the difeafe itfelf has made its appearance only of late years, fince the introduction of tea and coffee, and it is chiefly among the drinkers of thefe that miliary fevers are frequent.

A variety of obfervations point out a ftriking connection between the appearance of the miliary eruption and the ftate of the primæ viæ. Van Swieten, Quarin, Planchon, Zimmerman, and others have obferved, that it is occafioned by an accumulation of irritating matter in the ftomach. On the offending matter being difcharged, the eruption has been known immediately to difappear. We fhall find other eruptions, particularly the eryfipelatous, equally connected with the ftate of the primæ vitæ.

All thefe, and other debilitating powers, fhould be regarded perhaps, chiefly as predifpofing caufes, while the hot regimen is to be looked upon as the principal exciting caufe of this eruption. At leaft, we fhall not err much by forming this opinion, fince it is found, that whatever the ftate of the patient may be, the miliary eruption is very generally prevented by cool drink, and expofure to cool air. To this, however, there are fome exceptions. In 1758, Quarin obferves, this eruption was epidemic. Almoft all that were confined to bed were feized with it, although the primæ vitæ were cleared.

the patients kept cool, and all heating medicines avoided. Van Swieten and others obſerve that the miliary eruption is ſometimes epidemic, independently of any particular mode of treatment, and both Stork * and Planchon † mention inſtances where it occurred after every precaution had been uſed.

Moiſt variable weather is moſt favourable to its appearance. It is moſt frequent in ſpring, and more frequent in autumn than in winter or ſummer; winter is leaſt favourable to its appearance.

The reader will find a variety of cauſes of miliary fever enumerated by authors, particularly by Burſerius in the 2d vol. of his Inſtitut. Med. Pract. But theſe are rather the cauſes of the fevers in which this eruption moſt frequently appears, than of the eruption itſelf; ſuch authors regarding the miliary fever as an idiopathic diſeaſe.

Some diſpute exiſts concerning the contagious nature of the miliary fever, ſome aſſerting that it is, others that it is not, contagious. The diſpute could only have ariſen from its being regarded as an idiopathic diſeaſe. When it is known that the miliary eruption is an accidental appearance in all kinds of fever, the cauſe of this difference in opinion, and the means of reconciling it, are ſufficiently apparent.

3. Of the Treatment of the Miliary Fever.

As what has been termed the miliary fever is nothing more than the miliary eruption with the peculiar ſymptoms that always attend it, ſupervening on continued fever, and as the treatment of continued fever has already been conſidered, we have only at preſent to point out how far this treatment is influenced by the appearance of the miliary eruption.

* Anni Medici. † Sur la Fiev. Mil.

When a ſweat comes on in any continued fever, eſpecially where the debility is conſiderable, without relieving the ſymptoms, we have reaſon to fear that its continuance, among other bad effects, will induce this eruption, with the anxiety, oppreſſion, &c. that generally attend it.

Concerning the propriety of checking ſuch ſweats there can be no doubt. A dread of this practice, eſpecially where there is particular reaſon to expect the miliary eruption, is expreſſed in the writings of a variety of authors. It ſeems, however, to have ariſen, leſs from obſerving its bad effects, than from certain opinions reſpecting the eruption which, according to theſe writers, is the means employed by nature to throw out the morbific matter, from which they ſuppoſe the fever to ariſe. The effects of the practice indeed fully warrant the aſſertion juſt made.

The moſt effectual means of checking ſweat is the application of cold, and in many caſes it is the beſt. But the employment of it requires ſome caution.

If the fever be typhus, in which, however, the increaſe of temperature is conſiderable and ſteady, the application of cold may be free. The ſame may be ſaid of ſynocha, if we have no reaſon to dread a tendency to local inflammation. But in the ſynocha, ſweats rarely occur without relieving the ſymptoms. The application of cold requires much caution in the exquiſitely formed typhus, where the temperature is little, if at all, above the natural degree. Here we muſt truſt chiefly to the other means of invigorating the ſyſtem, which have been pointed out. Aſtringents are particularly indicated; the bark, ſulphuric acid and alum.

When the propriety of applying cold to check the ſweating is determined on, it ſhould be done gradually. The air of the bed-room ſhould be cooled, part of the bed-clothes re-

moved, the patient defired to lie with his arms bare, and allowed cold drink.

We ought at the fame time to employ gentle cathartics. An equal prejudice has prevailed againft this practice, and for fimilar reafons it is equally groundlefs. It appears from the foregoing obfervations refpecting the connection between the ftate of the primæ viæ and the miliary eruption, that wherever we have reafon to fufpect the prefence of irritating matter in thefe cavities, much is to be expected from removing it. We fhould inquire, therefore, whether the patient feels a fenfe of weight about the ftomach, whether the breath be offenfive, whether he is troubled with head-ach, eructations, or naufea, fwelling of the belly, or griping pains.

When the ftomach is oppreffed, Quarin recommends diluents, and if thefe fail, an emetic. Much dilution, however, is evidently improper where we wifh to avoid fweats;* and emetics as doubly hurtful, by promoting perfpiration and increafing debility, fhould be avoided, except where the eruption is evidently caufed by the contents of the ftomach.

When it happens, that notwithftanding our endeavours, the fweat continues, and the miliary eruption appears, or when the eruption has been induced by improper treatment, what mode of practice is to be adopted?

"It has been an unhappy opinion with moft phyficians," fays Dr. Cullen, "that eruptive difeafes were ready to be "hurt by cold, and that it was, therefore, neceffary to "cover up the body very clofely, fo as thereby to increafe the "external heat. We now know that it is a miftaken opi-"nion, that increafing the external heat of the body is gene-

* Hoffman cautions against the use of warm diluting liquors, unless the eruption has been repelled.

" rally mifchievous, and that feveral eruptions not only admit
" but require the admiffion of cool air. We are now per-
" fuaded, that the practice which formerly prevailed in the
" cafe of miliary eruptions of covering up the body clofe, and
" both by external means and internal remedies encouraging
" the fweating which accompanies this eruption, was highly
" pernicious, and commonly fatal. I am, therefore, of opi-
" nion, even when a miliary eruption has appeared, that in
" all cafes where the fweating is not manifeftly critical, we
" fhould employ all the feveral means of ftopping it that are
" mentioned above, and I have fometimes had occafion to
" obferve, that even the adminiftration of cool air was fafe
" and ufeful."

From the obfervations of other writers we might be inclined to infer, that however uniformly fafe the application of cold previous to the appearance of the eruption, it is a more doubtful practice while the eruption is prefent. Cafes are recorded in which it did harm.*

But in thefe, the application of cold was unguarded, and the ftate of the patient fuch that fudden expofure to cold might have induced the fame train of fymptoms, had there been no eruption. Unlefs the temperature is fteadily above the healthy degree, any fudden or confiderable expofure to cold is always improper. Even thofe who have feen the eruption repelled by cold, warn us againft the more dangerous extreme of heat; for while an unguarded application of cold now and then proves hurtful, keeping the patient warm never fails to be fo.

While the old practitioners oppreffed the patient with bedclothes, they were not aware that the eruption may be repel-

* The reader will find cases in which this eruption was repelled, and an alarming train of symptoms induced by exposure to cold, mentioned by Hoffman and others.

led by whatever debilitates, and that much heat may have this effect, as well as imprudent expofure to cold. There is reafon to believe indeed, that the latter caufe often produced the effect in confequence of the previous application of the former. The retroceffion of the eruption rarely happens when the cold regimen has been employed from the beginning of the difeafe. Delirium, fubfultus tendinum, dyfpnœa, anxiety, convulfions, and often death, fays Burferius, is the conconfequence of repelling the miliary eruption, and this may be done, he adds, by too much heat or too free an expofure to cold, by keeping the patient too long in the erect pofture, by violent affections of the mind, particularly by anger, terror, or grief. There is no eruption, according to Burferius, which is fo readily repelled as the miliary. The fame remark is made by Quarin and others. The latter thinks that the retroceffion is the more dangerous the more copious the eruption. The various fymptoms of debility which attend it, and which have been erroneoufly regarded as wholly arifing from it, in many cafes precede it.* It is in the typhus gravior where the debility is great, that the retroceffion is moft common, and attended with the worft Symptoms. See what is faid of the doctrine of repelled eruption in fpeaking of the treatment of the fynochus aphthofus.

Hoffman and Allionius forbid the ufe of acids in the miliary fever, for which the former has been juftly cenfured by Planchon and others It is the worft of prejudices, fays Quarin, which has inftilled itfelf into the minds of fome practitioners, that becaufe the fweat in miliary fevers is acid, abforbents fhould be employed, and acids of ever kind avoided.

* See the observations of Planchon and others. Subsultus tendinum, syncope, convulsions, delirium, &c. Planchon observes, often shew themselves a short time before the eruption recedes.

It ſeems to be the ſame hypotheſis that led to the exhibition of alkalis in the miliary fever.* The ammonia is that which has been moſt employed, and is often ſerviceable when it does not increaſe the perſpiration; but its good effects are to be attributed to its cordial not its alkaline property.

With regard to ſaffron, caſtor, elder-flowers, milfoil, and many other ſuch medicines, much extolled in miliary fever, they ſeem to be of little or no uſe, and as they tend to excite diſguſt and oppreſs the ſtomach, ought to be avoided.

When the miliary eruption brings no relief to the febrile ſymptoms, it may be regarded as a new diſeaſe, which combines its influence with that the patient previouſly laboured under to reduce his ſtrength. Its appearance in typhus, therefore, is an additional argument for a ſtrict adherence to the tonic plan; the irritation of the miliary eruption, indeed, and the debilitating ſweats which attend it, will even at an early period of fever induce ſymptoms of typhus. Opium, from its tendency to promote perſpiration, ſhould, as far as the ſymptoms admit of it, be avoided. Tralles, in his work on opium, alleges that the miliary eruption may often be induced by the uſe of this medicine.

As the appearance of miliary eruption in continued fever renders the tonic plan more neceſſary, it follows as a conſequence, that it renders the oppoſite plan more precarious. The bad effects of blood-letting in the miliary fever have often been obſerved; and it is ranked by moſt writers among the principal cauſes of retroceſſion.

We are not, however, to adopt the prejudices of thoſe who forbid blood-letting in all caſes where the miliary eruption appears. It is determined by experience, ſays Burſerius, that if while the miliary eruption is preſent, an inflammation of

* See this part of the subject considered at length by Burserius.

the viſcera be feared, or if the fever be very vehement, a large blood-letting may be employed without repelling the eruption. Quarin and others make ſimilar obſervations. Blood-letting, ſays Quarin, is particularly neceſſary in the miliary fever, when it has ariſen from the abuſe of ſpirituous liquors, or the ſuppreſſion of the lochia.

In conſidering the treatment of the ſynochus miliaris, I have taken no notice of bliſters, which have been warmly recommended in this fever, as there is nothing to be added on this part of the ſubject to what was ſaid in ſpeaking of the treatment in the ſynochus ſimplex. It appears from what was then ſaid, that their cordial property, for which they ſeem chiefly to have been recommended in the miliary fever, is very inconſiderable.

The remedies which have been employed, when a retroceſſion of the eruption, attended by various ſymptoms of debility, happens, are the ſame as thoſe recommended in ſimilar circumſtances in other eruptive fevers, and which we ſhall ſoon have occaſion to conſider more at length. In the diſeaſe before us, muſk and camphire are particularly recommended where convulſions ſupervene; opium, bliſters, frictions of the ſkin, and tonic medicines in all caſes. But our principal view ſhould be to bring out and ſupport a ſweat, and if the retroceſſion be followed by any conſiderable evacuation, we muſt be careful not to check it too ſuddenly. If a ſudden and copious evacuation follows the retroceſſion of the eruption, Burſerius obſerves, ſuch as much ſweating or copious diarrhœa, the bad effects are prevented. Different means, it is evident, will be proper in different caſes, according to the cauſe of the retroceſſion. See what is ſaid above of the cauſes of the retroceſſion.

SECT. III.

Of the APHTHOUS FEVER.

THE Aphthous Fever is defined by Dr. Cullen,

"Synochus. Lingua tumidiuſcula, linguæ et faucium "color purpuraſcens; eſcharæ in faucibus, et ad linguæ "margines, primum comparentes, os internum totum de- "mum occupantes, albidæ, aliquando diſcretæ, ſæpe coaleſ- "centes, abraſæ cito renaſcentes, et incerto tempore ma- "nentes."

This definition, we ſhall find, does not include all the affections which have been known by the name of aphthæ; but it deſcribes with ſufficient accuracy that to which, by the general conſent of phyſicians, the term is now confined.

It appears from what was ſaid in the Introduction, that the aphthous fever is to be regarded in the ſame light as the miliary, being nothing more than the common ſynochus accompanied with an eruption of aphthæ, and the peculiar ſymptoms that attend it.

In detailing the ſymptoms of the ſynochus aphthoſus, I ſhall purſue the ſame method as in the ſynochus miliaris; in the firſt place giving an account of the eruption, then enumerating the ſymptoms which precede or attend it, and laſtly pointing out the febrile ſtates in which it moſt frequently appears.

1. Of the Symptoms of the Aphthous Fever.

Of the Aphthous Eruption.

The aphtha infantum * is the ſame eruption which occaſionally appears in ſynochus; and whether it attacks the infant or the adult, and whether it appears with or without fever, it is attended with the ſame train of ſymptoms. As a ſymptom of ſynochus it has not demanded ſo much attention as when it appears as an idiopathic affection, which it ſeldom does in adults. In the writings of thoſe who treat of the aphthæ infantum, therefore, we find the beſt account of this eruption. I ſhall deſcribe the idiopathic affection as it appears in children, and then point out the ſymptoms which attend this eruption when it ſhews itſelf in ſynochus.

The local affection of the fauces is often the firſt ſymptom of the aphthæ infantum; certain ſymptoms, however, ſometimes precede it even in the youngeſt children. From appearing in health they very ſuddenly ſhew ſigns of uneaſineſs; they either refuſe the breaſt, or if they receive the nipple, do not ſuck; they appear reſtleſs and anxious, cry, ſleep leſs than uſual, and the ſleep they have is diſturbed. They become pale and emaciated, and are often troubled with hiccup, and diarrhœa, in which the ſtools are acrid and fetid. Curdled milk is ſometimes paſt by ſtool, and bile is vomited.† If the child is not very young, the pulſe is ſometimes conſiderably affected, becoming more frequent than in health,

* The thrush.

† Arnemann's Commentatio de Aphthis.

the temperature is increaſed, and a ſleepineſs ſometimes approaching to coma ſupervenes. In general, however, in children, the affection of the mouth and fauces is the firſt ſymptom, they become redder than natural, the tongue ſwells and becomes rough, and the nurſe perceives an increaſe of temperature in the child's mouth. Sometimes the mouth becomes pale inſtead of red, which generally preſages a worſe form of the diſeaſe.

Soon after theſe appearances, the aphthæ begin to ſhew themſelves in the internal fauces, and about the edges of the tongue. "Puſtulæ ſunt albicantes," ſays Ketelaer,* who ſaw as many caſes of this diſeaſe as perhaps any other phyſician, "ſummis ac internis oris, et interdum vicinis reſpira-"tionis partibus inſidentes." The true aphthæ are deſcribed in nearly the ſame manner by moſt of the authors who practiſed in thoſe countries where the diſeaſe is common. Armſtrong compares their firſt appearance to that of broken curds. Even on their firſt coming out, aphthæ ſometimes ſo run together that they look like a white compact cruſt, covering a great part of the internal fauces, and as it were, ariſing from the œſophagus.†

In ſhort, aphthæ are ſmall whitiſh eſchars, appearing in the fauces, and about the tongue or lips, ſometimes few and diſtinct, at other times numerous and confluent. Their number and degree of confluence are particularly to be attended to, as the prognoſis reſts much upon them.

In determining the number of aphthæ we may ſometimes be deceived, ſince they are often numerous on the deeper ſeated parts, while they are but thinly ſcattered on the tongue

* Ketelaer's Treatise de Aphthis Nostratibus.

† Aph. Boerhaav. 984. It is in this case that the symptoms abovementioned most frequently precede the appearance of aphthæ, they often arise from the disease first attacking the œsophagus.

and other parts of the mouth.* A perſon acquainted with the nature of the diſeaſe, however, can hardly be miſtaken, for wherever the aphthæ are numerous in internal parts, ſickneſs, hiccup, oppreſſion, and generally pain referred to the ſtomach, with much debility, point out the danger, which when theſe ſymptoms occur, is always urgent, whatever be the ſtate of the fauces. The preſence of this variety of the diſeaſe, it is evident, is not ſo eaſily aſcertained in children as in adults. But whatever be the attending ſymptoms, when the cruſt, mentioned by Boerhaave, appears to aſcend from the œſophagus, it is probable that the more internal parts are conſiderably affected, and the prognoſis, therefore, is unfavourable. Nor is the caſe more favourable when the whole mouth appears covered with a cruſt, and becomes dry and even rigid, the proceſs which ought to throw off this cruſt being abſent or extremely languid. If this ſtate continues long, the power of ſwallowing is loſt, and the danger becomes very urgent. When the cruſt ſpreads to the fauces, it ſometimes occaſions ſuffocation.

The colour of the aphthæ has occaſioned ſome diſpute, which ſeems to have ariſen from the ſame aphthæ changing their colour, and becoming darker the longer they adhere; for there ſeem to be no well authenticated caſes in which the aphthæ on their firſt appearance were of a dark brown or black colour, as ſome writers have alleged. Boerhaave indeed obſerves, that the colour of aphthæ is various, being either of a pellucid or ſhining white, like pearls, or of an opaque white or yellow colour, livid, or even black.† But he ſpeaks not of the difference of aphthæ on their coming out, but of the appearance of the ſame aphthæ at different periods; for his commentator Van Swieten,

* See Van Swieten's Commentaria in Aph. Boerhavii.

† Aph. 985.

Arnemann, Ketelaer, Armſtrong, and others, who had extenſive opportunities of ſeeing this diſeaſe, declare that they never ſaw aphthæ dark red, brown, or black on their firſt appearance.* We, therefore, ſee the propriety of Dr. Cullen's making whiteneſs one of the diſtinguiſhing marks of this eruption. Aphthæ, on their firſt appearance, however, ſometimes aſſume a light brown or aſh colour. Arnemann terms them "flavæ vel fuſcæ cineritiæ."

The white pellucid aphthæ, like pearls, are always the ſafeſt, † and when they are few in number the diſeaſe is ſcarcely attended with any danger. When aphthæ appear from the firſt of a browniſh colour, the prognoſis is bad. Van Swieten ſays, that he has uniformly found ſuch caſes fatal. The prognoſis is between theſe extremes, when the aphthæ appear at firſt of a pearl colour but in conſiderable number, and ſoon begin to aſſume a browniſh hue; when they become black the danger is very urgent; they are then to be reguarded as ſmall gangrenous ſloughs, which often reduce the whole internal fauces to a ſtate of mortification.

It has juſt been obſerved that it is only after the aphthæ have remained for a conſiderable time that they become brown or black; hence the time they adhere becomes a point of conſequence in forming the prognoſis; but when they begin to fall, we ſhall often be deceived if we look for the immediate termination of the diſeaſe ſince it frequently happens, that a freſh crop ſucceeds that which has fallen or been rubbed off.

* "Non enim verisimile est," Ketelaer obſerves, "ut in rebus sibi "adeo vicinis, et cognatis, ſors tantum polleat, cum albæ plus millies "nobis oblatæ sint, ut rubrarum, nigrarumve, ne umbræ quidem un-"quam apparuerint."

† When they appear of an opaque white, like lard, they are leſs favourable.

If this crop appears more numerous and crowded together than the firſt, the prognoſis is worſe than when the aphthæ appear fewer and more diſtinct. But upon the whole one crop falling off and another appearing affords a more favourable prognoſis, than the ſame crop continuing.

Aphthæ ſometimes fall off in the ſpace of ten or twelve hours, at other times they remain attached for many days; nor do they fall from the whole fauces at the ſame time, nor always firſt from any one part, but in this reſpect they are as variable as in their duration.

Although when the diſeaſe continues for a conſiderable time, repeated crops of aphthæ afford a more favourable prognoſis than the ſame crop remaining throughout the diſeaſe; yet the prognoſis is ſtill better, when the aphthæ fall early, as in the former caſe, and are not ſucceeded by a freſh crop or only by a very ſcanty one; it is, therefore, a matter of much conſequence in forming the prognoſis to be able to foreſee whether or not a freſh crop of aphthæ is about to come out; and this in ſome meaſure may be learnt from the appearance of the places which the former occupied.

If they be clean, red, and moiſt, the aphthæ either do not re-appear, or only re-appear in a ſmall number; but if they appear foul and parched, we may certainly expect a renewal of the eruption, and in ſuch caſes, the ſeparation and reproduction of the aphthæ often take place a great number of times before the final ſolution of the diſeaſe. Both Ketelaer and Van Swieten obſerved this proceſs repeated to the ſixth, ſeventh or eighth time. Upon the whole, however frequently the aphthæ return, thoſe which fall off the ſooneſt are the ſafeſt.

There are two ſeemingly oppoſite ſtates, which are perhaps equally dangerous. The one, when the new crop ſupervenes before the old crop is thrown off; this not only

gives rife to a great number of aphthæ adhering at the fame time, but alfo fhews that they have little tendency to feparate. The other, and no lefs dangerous, cafe, when the firft crop falls off, and from the appearance of the fauces we are led to expect another, which, however, does not come out, or at leaft, is delayed for fome days. If, under thefe circumftances much anxiety, oppreffion, and other marks of debility, or a degree of coma, fupervene, the danger is very great. The re-appearance of the aphthæ is generally attended with relief.

In the moft favourable cafes then, the aphthæ appear of a white pearly colour, fall off early, leaving the places they occupied clean, red, and moift; and upon the feparation taking place, all the fymptoms begin to abate, and in a fhort time wholly difappear. On the other hand, the more the aphthæ affume a brownifh tint, the longer they continue to adhere, the more foul and parched the places which they occupied appear, the fooner the firft crop is fucceeded by another, or the greater the fymptoms of debility, or the coma when a fecond crop does not make its appearance, the danger is the more urgent.

When they adhere very long the parts beneath are fometimes affected with gangrene, which has been known to fpread to the palate bones and other neighbouring parts.*

We have hitherto confidered the courfe of aphthæ in the fauces, where it may be feen, but this difeafe fometimes extends to the more internal parts, and feems to run the fame courfe in them.†

The fymptoms which in infants, teach us that the difeafe is

* Aph. Boerhaavii, Aph. 989.

† "Latius quandoque propagantur aphthæ," Lieutaud (Synopsis Med. Pract.) obferves, "quæ œsophagum, ventriculum et intestina "haud sine presenti vitæ discrimine nonnunquam invadunt." The same observations have been made by all who have been conversant with this disease.

extending along the alimentary canal, are, an appearance of much anxiety, oppreſſion and debility, vomiting, hiccup,* what Armſtrong calls watery gripes,† and convulſions. What places the matter beyond a doubt is finding aphthæ about the time they are obſerved to ſeparate in the fauces, thrown up from the ſtomach, or paſſed by ſtool.

The quantity thrown out in both ways is often aſtoniſhing. "Aphthas quando jam maturuerunt et excernuntur," ſays Ketelaer, "tanta copia aliquos dies per os et per alvum non-"nunquam rejici, ut aliquot pelves vel matulæ congeſtas eas "vix capiant." Vogel makes a ſimilar obſervation. This is almoſt incredible, and denotes the worſt form of the diſeaſe. Were there nothing to deſtroy the patient but the debility which ſo profuſe an evacuation muſt occaſion, he could not long ſupport it. The more aphthæ ſpread downwards the worſe is the prognoſis.

They have alſo been found in the trachea and bronchiæ.‡ They are known to have ſpread to them by the dyſpnœa, and by their being thrown up by coughing. This is always attended with great danger, the aphthæ often accumulating in theſe paſſages, ſo as to occaſion ſuffocation.

When the aphthæ of the mouth fall off, a ſalivation ſometimes enſues, in part at leaſt cauſed by the extreme ſenſibility which frequently remains after the aphthæ fall, the whole internal fauces appearing as if the cuticle had been abraded.

About the ſame time alſo, a diarrhœa frequently ſupervenes, which may either be produced by the affection of the ſtomach

* Hiccup attends aphthæ in the œsophagus or stomach. See Van Swieten's Comentary on the 659 Aph. of Boerhaave.

† This is one of the most fatal symptoms, as we shall see more particularly in considering the treatment in this disease, which must if possible be so regulated as to prevent its appearance.

‡ Lieutaud's Synopsis Med. Pract. and other works on this disease.

and the inteſtines, if the diſeaſe has extended to them, or by the acrid matter ſecreted in the mouth being ſwallowed. Theſe ſymptoms coming on towards the termination of the diſeaſe. when the patient is much debilitated, ſometimes prove fatal after the attendants, and even the phyſicians believe, the danger to be nearly paſſed.

When ſuch diſcharges are moderate, they have been looked upon as ſalutary. This opinion appears to have been as much an inference from hypotheſis as from obſervation ; it being a favourite maxim with the older phyſicians, that the dregs of the fever, as they were termed, ſhould be carried off by catharſis or veneſection. The patient indeed often recovers about the time the ſalivation and diarrhœa appear. But at this period the aphthæ fall, and the diſeaſe generally remits whether they occur or not. A moderate diarrhœa at the time the aphthæ fall, however, is often uſeful, eſpecially when the diſeaſe has ſpread to the ſtomach and bowels ; the irritation of the fallen aphthæ in the bowels frequently occaſioning a relapſe.

The taſte in general is nearly loſt, and deglutition is often prevented while the aphthous incruſtation remains.* After it is ſeparated, on the contrary, the taſte is ſo acute, and the whole internal fauces ſo ſenſible, that the mildeſt food gives pain, and the patient is now, although from a different cause, often as incapable of ſwallowing as before.

The aphthæ indeed frequently leave the parts ſo ſenſible, that they bleed on the ſlighteſt occaſion ; hence it is that bloody ſaliva and bloody ſtools frequently attend this diſeaſe. Boerhaave juſtly obſerves, that if we recollect that the ſeat of aphthæ is in the ſtomach and inteſtines, as well as in the fauces, we ſhall not be ſurpriſed at the variety of ſymptoms which

* Aphthæ, Vogel obſerves, often occasion suffocation merely by the swelling of the fauces which attends them.

attend, or follow them, denoting inflammation, excoriation, or gangrene in the alimentary canal.

The aphthæ infantum are ſometimes complicated with other diſeaſes moſt frequently with worms.

Idiopathic aphthæ rarely occur in adults. Ketelaer indeed declares that ſuch caſes are very common; but it was obſerved in the Introduction that Boerhaave had ſeen but two caſes of this kind; that neither Van Swieten nor Cullen had ſeen one, and Arnemann very few. When aphthæ appear as an idiopathic affection in adults, both the ſymptoms and treatment are the ſame as in the aphthæ infantum.

Of the Symptoms preceding and accompanying Aphthæ.

Although the diſeaſes in which the miliary eruption occurs, are no leſs various than thoſe occaſionally attended by aphthæ, yet it appears from what was ſaid of the former eruption, that in whatever diſeaſe it appears, a certain train of ſymptoms generally attends it. The ſame is true of aphthæ, although the accompanying ſymptoms in this inſtance leſs uniformly attend.

When aphthæ begin in internal parts (which is ſometimes the caſe in the ſymptomatic as well as idiopathic aphthæ) their appearance in the fauces is conſequently preceded by the various ſymptoms denoting their preſence in other parts of the alimentary canal. In this caſe the aphthæ appear to aſcend from the œſophagus in the ſame manner, as in the worſt caſes of aphthæ infantum.

Anxiety, oppreſſion, and debility, however, often precede the appearance of aphthæ, when they are about to make their firſt attack on the fauces, and like moſt other eruptions, they

are now and then preceded by a degree of coma, less frequently by delirium.

But such symptoms frequently occur in fevers where no aphthæ are about to appear, and aphthæ sometimes appear without being preceded by these, or indeed any other symptoms, which can be supposed particularly connected with them; so that although there are certain symptoms which frequently precede this eruption, especially when it begins in internal parts, yet there are none from which we can with much certainty predict its appearance.

If, however, the foregoing symptoms occur in fever, while at the same time the fauces appear unusually red or pale, there is reason to expect an eruption of aphthæ.

Of the Febrile States in which Aphthæ most frequently appear.

In some fevers there is a remarkable tendency to dysenteric affections. The symptoms of dysentery are afterwards to be considered; it is sufficient at present to observe, that in fevers attended by much griping and mucous and bloody stools, the appearance of aphthæ is more frequent than in most others.

The first mention of aphthæ which occurs in the works of Sydenham, is in his account of the dysenteric fever of the years 1669, 1670, 1671, and 1672. The aphthæ generally supervened in those cases in which the fever proved obstinate, and chiefly, he observes, where the hot regimen had been pursued, and diarrhœas checked by the unseasonable use of astringents. Arnemann makes the same observations.

Sydenham further observes of this fever, that it was seldom or never attended with sweats, while in fevers which appeared

at the ſame time, unaccompanied by aphthæ, the ſweats were often profuſe. This remark has been confirmed by many ſucceeding obſervations. Ketelaer even goes ſo far as to maintain, that it is the deficiency of perſpiration that renders aphthæ more frequent in cold than in warm climates; and in ſupport of this opinion obſerves, that he has found aphthæ rendered milder by a copious flow of ſweat or urine, and that every thing tending to check theſe diſcharges, increaſes the diſeaſe.

Aphthæ, notwithſtanding, are apt to appear in the miliary fever, where there is generally much ſweating.* Such is the ſimilarity between ſome of the ſymptoms attending aphthæ, and the miliary eruption, that many believe theſe eruptions to ariſe from the ſame cauſe,† and that when the one is prevented, the other, the general ſtate of the ſymptoms remaining the ſame, is a neceſſary conſequence.‡

We are well aſſured, however, that the miliary eruption may be prevented without inducing aphthæ. It will appear more clearly from what will be ſaid of the cauſes of aphthæ, that irritation of the primæ viæ and ſkin tends, from a well-known ſympathy which ſubſiſts between the different parts of the alimentary canal, and between every part of it and the ſkin, to give riſe to this affection of the fauces; and it is in this way that we may account for aphthæ being ſo common in dyſenteric fevers, and in thoſe

* Sydenham seldom met with aphthæ in fevers, except in the one just mentioned, remarkable for its dysenteric tendency; and in that which was mentioned when speaking of the synochus miliaris, in which the frequetnly observed both eruptions. See also M'Bride's Introduction to the Theory and Practice of Medicine.

† "Materiem aphthosam et miliarem eamdem esse judicabam." Stoll's Ratio Medendi.

‡ Van Swiet. comment.

where the ſkin is unuſually parched, or covered with ſo irritating an eruption as the miliary.

Aphthæ are alſo apt to ſhew themſelves where the debility is conſiderable; and particularly where thoſe ſymptoms, which have been termed putreſcent, make their appearance.*

Upon the whole the characteriſtic marks of the fevers in which aphthæ moſt frequently appear are morbid affections of the ſkin and bowels, and much debility.

There are many other diſeaſes occaſionally attended with this eruption. Among the principal of theſe are worms and dyſentery, further denoting the tendency of aphthæ to accompany affections of the alimentary canal;† and ſcurvy, phthiſis pulmonalis, and the laſt ſtage of all kinds of dropſy, further denoting their tendency to appear in debilitated ſtates of the ſyſtem.

Such are the aphthæ properly ſo called, the ſymptoms which attend them, and the fevers in which they are moſt apt to appear. The term aphthæ, however, has been uſed to expreſs diſeaſes very different from that we have been conſidering. Moſt of theſe are local affections of little conſequence.

The indefinite uſe of the term aphthæ is chiefly met with in the works of the ancients, "Nam quæ a priſcis "medicinæ conditoribus aphthæ deſcribuntur, adeo a noſtris "diverſæ ſunt, ut toto cœlo diſſent."‡ Many doubt whether the true aphthæ were at all known to the ancients, and think that we have borrowed a term from them for the name of a diſeaſe, which was unknown in the times and

* Arnemann.

† Boerhaave remarks, that aphthæ are apt to accompany all visceral inflammations.

‡ Ketelaer de Aphthis Nostratibus.

countries in which they practiſed.* In the works of Hippocrates, Aretæus, and Galen, we not only find, mentioned under this term, affections of the mouth different from aphthæ, (ſmall ſores for inſtance on the inſide of the cheeks and about the lips)† but alſo ſimilar eruptions in other parts of the body, particularly in the genitals. A puſtulary eruption of theſe parts, independent of any venereal affection, is not uncommon, and ſeems frequently the conſequence of cold, of which I have known ſeveral inſtances.

The reader will find an account of other eruptions termed aphthæ by the ancients in the works of Fernelius,‡ and in thoſe of Sennertus in his chapter entitled, De Oris Inflammationibus et Ulceribus.

2. Of the Cauſes of the Aphthous Fever.

In the ſouthern parts of Europe aphthæ are hardly known; an additional reaſon for ſuppoſing that the ancients were unacquainted with them; while in Holland and other northern countries there are few diſeaſes more frequent. Van Swieten obſerves, that while he practiſed in his native country (Holland), there were few ſymptoms which more frequently occurred to him in acute diſeaſes, whereas at

* Sennertus aſſerts, on the authority of Aretæus, that aphthæ were common in Syria and Egypt; but the diſeaſe mentioned by Aretæus is not the ſame with that now termed aphthæ.

† Van Swieten deſcribes a thruſh of a peculiar kind, which he thinks the ſame with one of the ſpecies of aphthæ mentioned by Aretæus. It was epidemic in Holland in the 18th year of the preſent century, appearing in ſmall ulcers about the lips, cheeks, and gums, and when neglected on account of the little uneaſiness it gave at firſt, quickly eroding the parts it occupied, and forming putrid ſores. This like the true aphthæ, was moſt apt to attack children, and when it appeared in adults was generally milder.

‡ Fernelii Univerſa Medicina.

Vienna he had not met with a ſingle inſtance of aphthæ in the ſpace of five years.

Aphthæ are moſt frequent in low marſhy ſituations, and in ſpring and autumn, particularly in the latter when it is unuſually moiſt, and follows a warm and moiſt ſummer. In ſhort, cold and moiſture are among the principal cauſes of this diſeaſe. In Zealand, which lies lower than the ſurface of the ſea, which is prevented from overflowing it by raiſed banks, aphthæ are ſo frequent, that Ketelaer calls them the endemic diſtemper of the iſland.

Although aphthæ appear in people of all ages, infants and old people are moſt ſubject to them. In many parts of Holland, it is unuſual for a child to eſcape aphthæ during the firſt month; but they are generally of ſo favourable a kind, that medical aſſiſtance is not neceſſary. In old people, in whom they appear during fevers, they are for the moſt part of a bad kind, and often prove fatal.

Although cold and moiſture have a principal ſhare in producing the diſeaſe, the operation of other cauſes ſeems neceſſary, ſince the majority of children in moſt countries, however cold and damp, eſcape it.

One of the chief is derangement of the primæ viæ. Aphthæ, we have ſeen, are frequently preceded by ſymptoms indicating ſuch derangement, and in the treatment we ſhall find that the ſtate of the primæ viæ, more than any other cauſe, influences the courſe of this diſeaſe.

It does not appear that derangement of theſe paſſages by its local irritation, firſt produces aphthæ in the ſtomach and bowels, which afterwards ſpread to the fauces; but from the ſympathy of parts, it occaſions their eruption in the fauces.

The various cauſes of derangement in the alimentary canal then are to be regarded as occaſional cauſes of aphthæ, and it appears to be in this way that worms and aphthæ are ſo fre-

quently combined. Bad milk is a frequent cauſe of this diſeaſe; Lieutaud obſerves, that a drunken nurſe often occaſions aphthæ in the infant, and the ſame may be ſaid of whatever elſe diſturbs the nurſe's health, anxiety, violent paſſions, &c.

Some ſuppoſe that bad milk may operate in producing aphthæ, merely by irritating the fauces, and it would be difficult to aſcertain that aphthæ proceed from the action of the milk on the ſtomach and inteſtines alone, although there are many reaſons for believing that this is the caſe. There can be little doubt, however, that more powerful irritations of the fauces are ſometimes the exciting cauſe of aphthæ.* By the irritation of the primæ viæ, alſo, we may account for an increaſed ſecretion of bile occaſioning this diſeaſe. Fernelius conſiders this as one of its moſt frequent cauſes. It has not, however, been generally ſo regarded; an immoderate ſecretion of bile being rare in thoſe countries where aphthæ prevail.

Such are the chief circumſtances which have been determined reſpecting the cauſes of the aphthæ infantum; yet in many caſes they do not ſeem to proceed from any of thoſe which have been mentioned; and in a ſtill greater number of inſtances, thoſe cauſes are applied, without producing the diſeaſe.

Still leſs is known reſpecting the cauſes which give riſe to aphthæ in adults. The preſence of the different diſeaſes in which they occur may doubtleſs be looked upon as the prediſpoſing cauſes, and in conſidering in what kinds of fevers they moſt frequently appear, we found certain circumſtances, beſides affections of the primæ viæ, namely, unuſual deficiency of perſpiration, the preſence of the miliary eruption, and debility, favourable to their appearance.

* See the Workof Stennertus, Dr. Home's Principia Medicinæ, &c.

3. Of the Treatment of the Aphthous Fever.

The treatment of aphthæ may be divided into two parts. In the firſt, we ſhall conſider the treatment of idiopathic aphthæ; and in the ſecond, that of aphthæ ſupervening on fever. As for thoſe caſes in which aphthæ ſupervene on dropſy and other diſeaſes, unaccompanied by fever, their treatment is in no reſpect different from that of idiopathic aphthæ, except as far as the treatment of the primary diſeaſe renders it ſo.

We are in the firſt place then, to conſider the treatment of idiopathic aphthæ.

The firſt thing to be done is to remove the remote cauſes, if they ſtill continue applied. It appears from the foregoing obſervations, that we have often reaſon to ſuſpect the diſeaſe to ariſe from bad milk. The ſtate of this ſhould, therefore, be examined, and if it be found that no attention to diet renders it mild and ſweet, it is neceſſary to change the nurſe.

Wherever we ſuſpect the diſeaſe to have ariſen from the ingeſta, we muſt begin the treatment by clearing the primæ viæ. Both emetics and cathartics are recommended by thoſe who have been moſt converſant with the diſeaſe.

The exhibition of the latter requires caution. They have ſometimes induced a fatal hypercatharſis. Children, indeed, even where no cathartic has been given, are very frequently carried off by diarrhœa.

This muſt not, however, deter us from employing gentle laxatives at the commencement. It is in fact one of the beſt means of preventing profuſe purging, for the irritating matter, when permitted to accumulate in the alimentary canal, is often the means of inducing it. Thoſe were the worſt and moſt dangerous caſes, Ketelaer, from very extenſive experience obſerves, in which cathartics were not employed in the beginning.

Thus far then the practice ſeems well aſcertained; a gentle cathartic is proper in all caſes at the commencement, particularly where there is reaſon to ſuſpect irritating matter in the alimentary canal. Nor ſhould the diſeaſe appearing in the mildeſt form, induce us to neglect this caution.

If there be ſymptoms of acidity in the primæ viæ, abſorbents are proper. Magneſia forming with the acid generated in the bowels a cathartic ſalt, anſwers a double purpoſe. Dr. Aery, in the ſecond volume of the Medical Muſeum, ſays, that he has almoſt entirely laid aſide other remedies in this diſeaſe, confining himſelf to magneſia in ſmall doſes; and with this practice for many years he had loſt only one in thirty. Dr. Underwood alſo truſts chiefly to abſorbents in mild caſes.*

Should the purging induced, ſhew a tendency to become exceſſive, which is always attended with danger, a gentle anodyne is proper after the offending matter is evacuated.

It ſometimes, though rarely happens, that ſymptoms denoting a tendency to viſceral inflammations ſhew themſelves. It is then better to permit the purging to continue till the ſymptoms are relieved, and at all events not to check it by opiates. Children are much leſs ſubject than adults to ſuch inflammations. The chief danger in the aphthæ infantum ariſes from debility.

When there is no inflammatory tendency, opiates may be uſed to procure ſleep, proper means being employed to prevent conſtipation.

But the practice which is proper at the commencement of the diſeaſe is by no means ſuited to the advanced ſtage of it. If the diſeaſe has been properly treated from the beginning, there cannot at this period be any occaſion for cathartics. But even in thoſe inſtances, in which proper evacuations have

* Dr. Underwood on the Diseases of Children.

been omitted till the diſeaſe is far advanced and the ſtomach and bowels are loaded with irritating matter, we are not warranted to recommend them. They have often induced a fatal hypercatharſis. The fæces may be evacuated by clyſters, but it ſeems dangerous to go further.

Arnemann propoſes to give cathartics in ſmall doſes till the deſired effect is produced, in order to guard againſt hypercatharſis; but moſt writers are of opinion that neither this nor any other precaution can render their exhibition ſafe at the height of the diſeaſe. Ketelaer, whoſe opinion muſt have great weight, makes ſome excellent obſervations on the uſe of cathartics. "Eædem rationes etiam contra purgationem eam "militant, quæ cacochymiæ propria et accommodata, ab "univerſo corpore et ulterioribus viis, noxios quoſque hu-"mores trahit. Ea hic funeſtiſſima eſt, et intra paucas horas "hypercatharſi finem vitæ plerumque facit." But there is another kind of purging, he adds, if ſo it can be called, which may be employed with propriety, as it only evacuates the fæces, that induced by clyſters. These, he continues, are excellently ſuited to this diſeaſe in which coſtiveneſs is frequent; they not only empty the inteſtines, thus removing a noxious irritation; but they often relieve oppreſſion, and what is of equal conſequence, reſtore the other excretions, particularly thoſe of the ſkin and kidneys, and tend to looſen the aphthæ.

The indiſcriminate uſe even of clyſters in this diſeaſe, however, as indeed Ketelaer in other paſſages admits, ſeems often dangerous; they have the ſame tendency with cathartics, though in a leſs degree, and ſhould never perhaps be employed at this period, when the body is moderately open; unleſs the diſeaſe be mild and the inflammatory tendency evident. Hypercatharſis is chiefly to be dreaded when the diſeaſe has ſpread to the ſtomach and bowels.

Reflecting on what has been ſaid, we readily perceive the effects to be wiſhed for, and thoſe to be dreaded from clyſters. By an attention to theſe, we determine what their compoſition ought to be. The firſt thing we have in view is to evacuate the fæces with as little irritation as poſſible, they muſt therefore be mild, they ſhould conſiſt chiefly of water gruel or ſome other mucilaginous decoction. Some have recommended the addition of a cathartic, but this ſhould only be had recourſe to when milder clyſters are found ineffectual. We have alſo in view to relax the excretories. On this account the quantity injected ſhould be conſiderable. When the aphthæ ſpread to the great inteſtines, clyſters ſerve a further uſe, in lubricating and ſoftening the parts to which they are immediately applied, and thus diſpoſing the aphthæ to fall. In ſhort, they produce effects ſimilar to thoſe of gargles in the fauces, and ſhould, therefore, in theſe caſes be gently detergent as well as mucilaginous. When ſuch clyſters are found to produce but little evacuation, which is often the caſe, they may be frequently repeated.

That I may give at one view what is to be ſaid of the employment of cathartics in the aphthæ infantum, which forms a principal part of the treatment, it may be obſerved, that there is a period which ſucceeds that I am ſpeaking of, in which their exhibition again becomes proper.

We muſt, ſays Arnemann, be careful not to exhibit purgatives while the aphthous cruſt ſtill adheres to the inteſtines and their ſurface is raw and excoriated; but they are neceſſary in the beginning of the diſeaſe, and in its decline, when the aphthæ begin to fall, and are paſſed by ſtool. They are then ſerviceable by expelling the fallen aphthæ which, when allowed to remain, ſoon begin to corrupt and produce a new train of morbid ſymptoms

But even after the aphthæ begin to fall, the danger of hy-

percatharſis, is by no means paſſed, and ſometimes ſcarcely at all leſſened. We muſt not, as ſoon as a few aphthæ are thrown out by ſtool or vomiting, order a cathartic; but wait at leaſt twenty-four hours after this appearance, in order to learn whether the ſeparation of the aphthæ be really the ſolution of the diſeaſe, or merely partial and ſucceeded by a freſh crop, which is known by the ſymptoms ſuffering no abatement. In this caſe nothing more than an emollient clyſter is to be recommended.

When on the other hand, the ſymptoms abate, and particularly when the aphthæ of the fauces fall, leaving the parts they occupied clean and moiſt, a cathartic is not only ſafe but neceſſary. If irritating matter in the primæ viæ is capable of producing the diſeaſe, where it has not previouſly exiſted, it may certainly be the means of renewing it.

However flattering the ſtate of the patient, hypercatharſis even at this period may be induced by a rough medicine, the inteſtines being often left in a very irritable ſtate. Rhubarb has been much celebrated as a cathartic in this diſeaſe.

Such are the circumſtances to be attended to in the employment of cathartics in idiopathic aphthæ, without an attention to which, the practitioner muſt often be guilty of fatal errors.

At the commencement emetics are given for the ſame reaſon as cathartics, to aſſiſt in evacuating the morbid contents of the alimentary canal; but on many accounts are often more beneficial; their operation tends leſs to weaken, and is particularly eaſy in young children. Beſides the cauſe of the diſeaſe ſeems often lodged in the ſtomach rather than the inteſtines. A pain in the ſtomach and vomiting more frequently precede the appearance of aphthæ, than a griping or diarrhœa. The ſtomach is an organ of greater ſenſibility than the inteſtines, and its affections produce greater and more ſudden effects on diſtant parts. If aphthæ be ever produced by acrid mat-

ter applied to the fauces, it is chiefly from the ſtomach that it comes. In ſhort the ſtomach is that part of the primæ viæ which ſeems moſt connected with the ſtate of the diſeaſe. "Emetica infantibus præſcripta, ſays Arnemann, omnibus "medicamentis reliquis palmam præripere videntur, quando "morbi fomes in ventriculo adhuc latet, et anxietas, ſingul-"tus, ructus male olentes vel vomituritiones ipſæ adſunt." Nor are they, he adds, to be preferred to cathartics, only becauſe they ſeem better calculated for removing the cauſe of the diſeaſe, but alſo becauſe they are found to weaken much leſs. They ſeem ſerviceable too, he might have added, by promoting perſpiration, and it is probably in this way that they often relieve the diſeaſe, where the ſtomach is not loaded.

If, however, the firſt emetic does not bring relief, it is not probable that its repetition will be attended with much benefit.

Emetics in the more advanced ſtages are either unneceſſary as in mild caſes, or they may do harm where the aphthous incruſtations have ſpread to the œſophagus and ſtomach, by producing hemorrhagy, excoriation, or inflammation.

Dr. Armſtrong and Ketelaer recommend antimonial preparations both as emetics and cathartics in this diſeaſe. The propriety of antimonial cathartics may be queſtioned.

Diſputes have ariſen reſpecting the propriety of blood-letting in the aphthæ infantum. Some aſſerting that all periods are equally proper for the employment of this remedy, ſhould inflammatory ſymptoms appear; others deeming it ſo dangerous to let blood after the appearance of aphthæ, that there is ſcarcely any ſymptom which will induce them to have recourſe to it.

From the nature of the diſeaſe the queſtion ſeems a priori eaſily decided, and the judgment we are thus led to form is ſanctioned by experience. Whatever other effect veneſection

produces, it always impairs the ſtrength. The queſtion then is, are there any ſymptoms of the aphthæ infantum which we would endeavour to remove at this riſk? In perhaps ninety nine of a hundred caſes there are not. The excitement is never ſuch as to threaten danger, and viſceral inflammation ſeldom occurs in this form of the diſeaſe. When it does, blood-letting may be employed at any period; but the more cautiouſly, the later the period. Such is the practice warranted by experience, and with reſpect to aſſertions which pre-conceived opinions have extorted, even from the beſt writers, they deſerve little attention.*

The diet in aphthæ requires ſome attention. When fever is preſent, it muſt be regulated by an attention to the febrile ſymptoms. If the excitement be conſiderable, it muſt be light and diluent; if too low, as happens in the majority of caſes, the diet muſt be more nouriſhing; but in all it ſhould be mild and mucilaginous. In moſt caſes it is proper in the advanced ſtages, to give cordials † compoſed of a little wine and aromatics, ſweetened.

If the patient be at the breaſt and can ſuck, good milk of courſe muſt form the principal part of the diet. Where deglutition is wholly prevented, mild nutricious clyſters are often ſerviceable.

* "Omnem igitur, præsentibus aphthis," says Ketelaer, "inci-"sionem venæ huc usque damnamus, atque proscribimus." But in another place the same author admits, that plentiful blood-letting is necessary when an internal inflammation supervenes at any period of the disease, and gives a case in which it saved the patient's life.

† For the use of the bark in this disease, see what is said of it in speaking of local remedies. It will then be necessary to mention it, and it will save repetition to throw together the few observations to be made on it.

It only now remains to make ſome obſervations on the local remedies employed in the aphthæ infantum; and theſe, in the mildeſt caſes where the aphthæ ſpread no farther than the fauces, with the exception of gentle aperients, are all that are neceſſary.

In infants, the applications made to the internal fauces muſt either be ſuch as may be ſwallowed, or they muſt be applied in very ſmall quantity, by means of a hair-pencil, or a bit of rag at the end of a ſtick. The former are not only uſeful by their effects in the fauces, but ſerve a ſimilar purpoſe in the ſtomach and inteſtines when the aphthous eruption has ſpread to them. They are generally compoſed of mild mucilaginous and gently ſtimulating decoctions. The decoction of turnips, or turnip-radiſhes, or their expreſſed juice mixed with water, and ſweetened with honey, may be given in the quantity of a dram or two every half hour. The common people in Holland uſe ſmall beer or ale ſweetened with ſugar. Van Swieten recommends veal broth, boiled with rice and bruiſed turnips, which has the advantage of being nutricious.

When the rectum is affected, the clyſters ſhould conſiſt of ſuch decoctions.

The ingredients left, after the preparation of ſome of theſe decoctions, are often applied to the external fauces by way of cataplaſm, and tend to relieve the internal parts.

More ſtimulating remedies ſeem in many caſes to produce better effects. Dr. Armſtrong found a ſolution of ſulphate of zinc, in the proportion of about half a ſcruple, or rather more, to eight ounces, very ſucceſsful; and about a dram of this ſolution, he obſerves, now and then ſwallowed, is of ſervice by cleanſing the ſtomach and bowels. He generally applied it, however, by means of a bit of rag three or four times in the twenty-four hours.

I ſhall have occaſion to conſider more particularly when treating of the cynanche maligna, the different applications to the internal fauces, employed when a tendency to gangrene ſhews itſelf.

There has been much difference of opinion concerning the uſe of refrigerant and aſtringent gargles in aphthous affections. Practitioners having obſerved, that in certain caſes an alarming train of ſymptoms ſometimes attends the ſudden retroceſſion of aphthæ, have diſapproved of ſuch gargles. Ketelaer reprobates them in the ſtrongeſt terms.

This appears to be reaſoning not only a priori, but reaſoning alſo on very bad grounds. As this mode of reaſoning, however, has been very generally adopted in this and ſimilar caſes, it may not be improper to take this opportunity of making ſome obſervations on it.

In almoſt all eruptive fevers it now and then happens, that the eruption ſuddenly diſappears, a train of ſymptoms ſupervening, which, if effectual means for reſtoring the eruption are not ſpeedily employed, often terminates fatally. It has been inferred, that the train of ſymptoms which attends the retroceſſion is its conſequence; and that the ſame effect will follow if we repel, or even retard the eruption, whatever be the means employed for this purpoſe.

This mode of reaſoning is ſimilar to, and equally fallacious with, that employed reſpecting the ſolution of fevers by criſes. In this caſe it was remarked above,* that the inference is invalidated by reflecting, that the critical ſymptoms and the ſolution of the diſeaſe, may be the effect of a common cauſe. So in that before us; although dangerous ſymptoms are ſometimes obſerved to ſupervene on the eruption's ſpontaneouſly diſappearing, it is by no means an inference from this, that

* See page 188 et seq.

the train of unfavourable ſymptoms is occaſioned by the retroceſſion of the eruption; both may be the effects of a common cauſe, the diſappearance of the eruption being only one of the unfavourable ſymptoms, and having no ſhare in producing the others. And that this is generally the caſe appears highly probable, when we know that the accompanying ſymptoms often appear before the retroceſſion, that it is in debilitated ſtates of the ſyſtem, and after debilitating cauſes have been applied, that the retroceſſion generally happens; and that debility often produces the ſame train of ſymptoms in caſes where there is no eruption.

That ſuch ſymptoms will not follow the retroceſſion or retardation of the eruption, except the body be ſomehow or other peculiarly prediſpoſed to them, appears from numberleſs facts, which ſeem at firſt accidentally to have obtruded themſelves on the attention of phyſicians. Thus we know that retroceſſion in the ſmall pox or miliary fever has been accompanied by the ſame ſymptoms which attend the retroceſſion of aphthæ. In a thouſand caſes, however, the moſt vigorous means for repelling the eruption in theſe diſeaſes are every day employed, and they are actually impeded and kept back, and yet no bad conſequences, but on the contrary, the beſt effects, enſue.

It is true indeed, that when the eruption is recalled, the unfavourable ſymptoms generally diſappear; but what are the means of recalling the eruption? thoſe which obviate the debility that occaſioned its retroceſſion; and we have reaſon to believe, that the relief obtained is not the conſequence, but the cauſe of its re-appearance.

In conſidering the propriety then of aſtringent gargles in aphthæ, let us appeal from the doctrine of retroceſſion to ſimple fact.

Have aſtringent gargles been employed in this diſeaſe, and what have been their effects? They were employed in caſes

of aphthæ as early as the days of Sydenham; for this author used the bark in fevers, while aphthæ were present, and found that the fever yielded and the separation of the aphthæ was promoted by it. Such was the dread of astringent applications while aphthæ were present, that, even in typhus long after the benefit derived from the bark in this fever was ascertained, the appearance of aphthæ was deemed a sufficient reason for avoiding it, till Sydenham and some other practitioners ventured to employ it. I was encouraged to give the bark in debilitated aphthous patients, says Van Swieten, in whom the incrustation often became very thick. It was given in decoction, because the powder is not easily swallowed when the fauces are covered with aphthæ. I did not give the bark in those cases without some fears that by its astringency it might do harm; of two evils, however, the best that could be done was to choose the least. I therefore continued to give the bark, interposing between the doses emollient decoctions, to correct any hurtful tendency it might have. I had not, he adds, continued this practice long, before I was astonished to find that the aphthæ terminated favourably in those patients who took the bark, sooner than in those who did not, although the latter were not only stronger but had also less fever.

So well convinced physicians now are of the safety of bark in aphthæ, that they not only use it occasionally as a gargle, but give it internally in large doses, even where there is no fever, if the symptoms of debility are alarming.*

The same objections have been urged against the use of acids, tending, it was supposed from their refrigerant power to repel the eruption, and particularly against the sulphuric acid on account of its astringency. Some practitioners, however,

* See the observations of Boerhaave, Van Swieten, Ketelaer, Vogel in his Prælectiones de Cog. et Curand. Morbis, &c.

have been bold enough to employ them, and have eſtabliſhed the propriety of doing ſo.* The muriatic acid properly diluted, has been found particularly uſeful.

Such is the treatment of the aphthæ infantum, and from what has been ſaid may be readily collected that of every other form of the diſeaſe.

With regard to the treatment of ſymptomatic aphthæ, it ſeems to be much more ſimple than many have imagined. It is not difficult to perceive how hurtful many of the prejudices juſt mentioned muſt prove, if permitted to influence our practice in every diſeaſe in which this eruption occurs.

When indeed aphthæ prove critical in fevers, which rarely happens, it would be improper to employ any means which might tend to impede the eruption. The uſe of aſtringent gargles, even in this caſe, has not, as far as I know, been found injurious. From analogy, however, we ſhould be inclined to avoid them. It is improper, we know, to check other critical diſcharges, thoſe for inſtance by ſweat or ſtool.

It only remains to make a few obſervations on certain ſymptoms, the treatment of which does not fall under the general plan of cure.

Thoſe which chiefly demand attention, are profuſe diarrhœa or hypercatharſis, and the ſymptoms which attend retroceſſion. It often happens indeed that in neither of theſe we can be of any ſervice. In the latter we muſt truſt chiefly to tonic medicines. The eruption ſeems to recede in conſequence of debility, and when this is obviated, it often re-appears. Bark

* For a variety of applications to the internal fauces, see Vogel and others on Aphthous Fever. For relieving the pain of the excoriated fauces, Burserius recommends a mixture of the yolk of eggs, cream, and syrup of poppies; when the salivation is considerable, a decoction of agrimony with honey; when it is obstinate and profuse, gentle astringents.

and aſtringent wines are the remedies chiefly to be depended on. Thus the means which have been ſuppoſed capable of occaſioning retroceſſion, are not only the beſt means of preventing it, but alſo of obviating the danger which attends it. Gently ſtimulating applications to the internal fauces are ſometimes of ſervice in recalling the eruption.

With regard to hypercatharſis, we muſt endeavour to check it by opiates and aſtringents. Of the latter, gum kino and the extract of logwood ſeem the beſt for this purpoſe. Where there are ſymptoms of acidity, the miſtura cretacea ſhould be joined with theſe medicines; but caution is requiſite in checking even hypercatharſis, and the diarrhœa which occurs in the decline of the diſeaſe and throws out the fallen aphthæ, we have ſeen, if not profuſe, is ſalutary.

SECT. IV.

Of the Veſicular Fever.

Concerning the characteriſtic ſymptoms of this fever there has been ſome diſpute. It is defined by Dr. Cullen,

"Typhus contagioſa, primo, ſecundo, tertio, morbi die, "in variis partibus veſiculæ avellanæ magnitudine, per plures "dies manentes, tandem ichorem tenuem effundentes."

Dr. Cullen never ſaw the diſeaſe but once, and ſome of thoſe who have ſeen it more frequently have propoſed conſi-

derable alterations in his definition. Dr. Dickſon * obſerves, that he doubts much whether this diſeaſe ſhould be conſidered as contagious. He ſaw ſix caſes, in none of which it was received by contagion, nor communicated to thoſe who attended the ſick.

He alſo objects to that part of the definition in which it is ſaid that the eruption appears on the firſt, ſecond, or third day, as he obſerved it appear on other days. † Perplures dies manentes, he alſo thinks exceptionable, as he never found the veſicles remain for many days.

The fluid of the veſicles, inſtead of being a thin ichor, as mentioned by Dr. Cullen, was a bland, inodorous, and inſipid fluid; and laſtly he obſerves, inſtead of being poured out, it was generally abſorbed. He therefore propoſes the following inſtead of Dr. Cullen's definition.

" A fever accompanied with the ſucceſſive eruption from " different parts of the body, internal ‡ as well as external, " of veſicles about the ſize of an almond, which become " turgid with a faintly yellowiſh ſerum, and in three or four " days ſubſide."

This definition is certainly preferable to that given by Dr. Cullen, not becauſe the diſeaſe never appears in the form deſcribed by him, but becauſe it is neceſſary to have a definition including every form of it.

Dr. Cullen's definition applies perhaps to the generality of caſes. On the Continent, where the diſeaſe is more frequent

* See his paper on Pemphigus (the name by which this fever is generally known), in the Transactions of the Royal Irish Academy, in 1787.

† Sauvage's remarks, that the vesicular eruption sometimes appears on the fourth day.

‡ We shall find this eruption is not confined to the skin.

than in thefe kingdoms, it feems generally to affume the appearance defcribed by him. The blifters in particular are generally filled with an acrid ferum, which is difcharged, not abforbed.*

Mr. Blagden, in a letter to Dr. Simmons, relates cafes of pemphigus which fell under his care, and very accurately correfpond to Dr. Cullen's definition.

There is another letter on the fame fubject addreffed to Dr. Simmons by Mr. Chriftie, whofe obfervations agree better with thofe of Dr. Dickfon. He thinks the difeafe ought to be divided into two fpecies, pemphigus fimplex, and pemphigus complicatus.

1. Of the Symptoms of the Veficular Fever.

Of the Veficular Eruption.

This eruption appears in the form of fmall pellucid blifters, fimilar to thofe produced by burning. They are of different fizes, fometimes as large as walnuts, more frequently about the fize of almonds, and often much lefs, furrounded by more or lefs inflammation. They appear on the face,† neck, trunk, arms, and now and then over the whole body,‡ and fometimes run into each other.

It has juft been obferved that external parts are not the only feat of this eruption. The mouth and fauces, where it now and then makes its firft appearance, are particularly apt to be

* See the observations of Burserius and other foreign writers on this disease.

† Burserius observes, that they are particularly apt to appear on the face and nose.

‡ See a paper by Dr. Stewart, in the Med. Commentaries. When they have appeared on the scalp, the hair generally falls from the places they occupied.

attacked by it. This happened in a caſe related by Dr. Dickſon, in which, on the third day of the fever, the patient complained of a ſmarting itching, and, as ſhe termed it, tingling of her tongue and inſide of her mouth. Her tongue was of a florid red colour, dry and clean. On the day following there appeared upon it a large pellucid viſicle filled with a yellowiſh ſerum, a ſmaller one of the ſame kind appearing on the inſide of the cheek.

In ſome inſtances the diſeaſe ſpreads along the whole alimentary canal. "No perſon," Dr. Dickſon remarks, "has "noticed an extraordinary peculiarity in this diſeaſe, that the "veſicles have taken poſſeſſion of the internal parts of the "body, and proceeded in ſucceſſion from the mouth downward through the whole tract of the alimentary canal, "ſome riſing while others decayed."*

The following ſymptoms indicate that this eruption is ſpreading along the alimentary canal. Great difficulty of ſwallowing, the veſicles in the mouth, when there are any there, at the ſame time beginning to ſhrivel and crack, the eruption being apt, in ſpreading to neighbouring parts, to leave thoſe it firſt attacked From theſe ſymptoms, eſpecially if accompanied with hiccup, we infer that veſicles are coming out in the œſophagus.

When they have ſpread to the ſtomach the patient complains

* He first observed this in the case of a woman treated by Dr. Gregory in the Edinburgh Infirmary. In this instance, the menses had been interrupted for a year and a half, during which period the patient had been twice before subjected to the same disease, and each time it followed a vomiting of blood. The other case in which Dr. Dickson met with this eruption spreading along the alimentary canal, he relates very minutely. Here the first appearance of the eruption was in the mouth.

of pain referred to that organ, and naufea; whatever is taken is vomited, and often mixed with blood.

Similar symptoms attend their prefence in the inteftines, a general fenfe of sorenefs is felt in the abdomen, and the ftools are often bloody.

After the blifters have remained for an uncertain time, from one to feveral days, they either break, difcharging in fome cafes a yellowifh bland, in others, a fharp ichorous fluid;* or they begin to fhrink, and in a fhort time difappear. And this perhaps is the moft favourable termination, when they break they fometimes leave troublefome ulcers.† The veficles which firft appear fooneft fubfide.

From perufing the cafes of pemphigus, which have been accurately defcribed, we fhould be inclined to think that the eruption is moft apt to attack internal parts when the matter of the veficles on the furface is abforbed; from one or two inftances, however, no general conclufion can be drawn. It is faid, that in a pemphigus which raged in Switzerland, in which the eruption often attacked the fauces, thefe parts were always moft affected when the fkin was leaft fo; but there is reafon to believe that the veficular fever has fometimes been confounded with the fcarlatina.

Pemphigus refembles the fmall pox, in frequently leaving pits in the fkin; and in the parts which the veficles occupied, remaining for a confiderable time afterwards of a dark colour.‡

* It sometimes happens in the same case, that the fluid in some of the vesicles is ichorous, in others bland. See the Observations of Dr. Stewart, above alluded to.

† Mr Blagden observes of one of his patients, in whom the vesicles broke, that the sores were not completely healed in less than two months. For the most part they heal readily.

‡ Dr. Winterbottom's Paper, in the third volume of the Medical Facts and Observations, and Mr. Blagden's letter.

The time during which new veſicles continue to come out is as uncertain as their duration. According to Dr. Cullen's definition, no freſh veſicles appear after the third day, but this we have ſeen by no means applies univerſally.*

Swellings and abſceſſes of the parotid, inguinal, and axillary glands, have frequently accompanied this eruption; and as in other caſes of continued fever, accompanied by theſe ſwellings, the ſafety of the patient ſeems often to depend on the matter formed in them being diſcharged.

The veſicular eruption ſeldom brings relief. But the prognoſis in this variety of fever is in ſome reſpects influenced by its ſeat and appearance. When the veſicles are not numerous and only appear on external parts, they demand little attention; when they are numerous, when they attack the alimentary canal and are attended with a ſmall hard pulſe, the danger is conſiderable.

When the ulcers left by the veſicles, although external, appear livid, ſhewing a tendency to gangrene, which ſeldom happens except in well marked typhus, the danger is very great. Even in idiopathic caſes of this eruption, where there is no fever, gangrene has been known to ſupervene. There is then conſiderable danger.† In general where there is no fever, it is unattended by danger.

Of the Symptoms preceding and attending the Veſicular Eruption.

In ſome caſes, like the foregoing eruptions, it is preceded by anxiety and depreſſion, but more generally by no peculiar ſymptoms.‡

* In chronic cases, as I have myself witnessed, they often continue to come out for a great length of time. See a case related by Mr. Christie.

† Burserius relates a case of this kind which terminated fatally.

‡ It appears, from what was said of one of Dr. Dickson's patients,

A degree of coma, it was obſerved, frequently precedes the appearance of the miliary and aphthous eruption, and this we ſhall find is a frequent forerunner of moſt of the eruptions we ſhall have occaſion to conſider. It has not been obſerved, however, particularly frequent in the veſicular fever.

Nor is this eruption generally accompanied with any peculiar ſymptoms, beſides thoſe already enumerated, which the eruption itſelf occaſions.

Of the Febrile States in which the Veſicular Eruption moſt frequently appears.

Like other ſymptomatic eruptions, it is moſt apt to ſhew itſelf in thoſe fevers in which the typhus prevails. The ſymptoms of the cold ſtage are generally well marked, attended with head-ach, ſickneſs, and oppreſſion, the pulſe is frequent, ſeldom ſtrong or full, and delirium is a common ſymptom.

It appears from what was ſaid of the definition of the ſynochus veſicularis, that there is no particular period of the fever at which the eruption ſhews itſelf. It now and then appears in other diſeaſes. (See an account of the Cynanche Maligna in the Acta Helvetica, by Dr. Langhans.) There is reaſon to believe, that in ſeveral epidemics which raged in different parts of the Continent, the veſicular eruption attended cynanche maligna, but the accounts of them are far from being diſtinct. This eruption has ſometimes accompanied irregular forms of ſmall pox. See Sydenham's account of the ſmall-pox of 1670, 1671, and 1672.

that when the eruption is about to appear in the mouth, it is sometimes preceded by a peculiar sensation and change of colour in the parts which it is about to occupy.

I have frequently ſeen the veſicular eruption unaccompanied by fever of any kind. (See papers by Dr. Winterbottom, and Mr. Gaitſkell, in the 4th vol. of the Mem. of the Med. Soc. of London.) Burſerius ſpeaks of this eruption without fever as a frequent occurrence where he practiſed.

2. Of the Cauſes of the Veſicular Fever.

The veſicular fever was unknown to the Greek, Roman, and Arabian writers.

Some indeed aſſert that mention of it is to be found in the writings of Hippocrates and Galen; but this ſeems to be a miſtake. Sauvages conſiders it as deſcribed by Bontius, in his Medicina Indorum; but Dr. Dickſon aſſerts, that, except one caſe related by Carolus Piſo, he can find no diſtinct account of it in any author before the days of Morton, who took notice of this diſeaſe towards the end of the laſt century,* but without deſcribing it particularly.

Sauvages met with it himſelf in the hoſpitals of Montpellier, near the beginning of the preſent century, and gives the following account of it, "Pemphigus, febris, eſt acuta exanthematica bullis ſeu ampullis pellucidis avellanæ magnitudine, per corpus enaſcentibus, inſignita." Since his time it has been deſcribed by various authors; moſt of what they ſay of it, however, conſiſts in the narration of particular caſes, if we except ſome, for the moſt part indiſtinct, accounts of it, as it appeared in the form of an epidemic on different parts of the Continent.

As little has been determined concerning the cauſes of the

* Burserius even doubts whether the disease mentioned by Morton be the pemphigus; of this, however, there can be little doubt. See what is said in the Introduction.

veſicular eruption, as thoſe of perhaps any other diſeaſe. There is one inſtance in which it occurred three times in the ſame patient, during a long interruption of the menſes, and another in which it occurred twice, each time attacking the patient on a viſit to a cold climate.* It appears from ſuch caſes, as well as one related by Dr. Hall, in Dr. Duncan's Annals of Medicine, that the diſeaſe is apt to attack the ſame perſon more than once, and that it probably, like ſome other ſymptomatic eruptions, particularly the eryſipelatous and miliary, leaves behind it a prediſpoſition to future attacks.

As with reſpect to the other eruptive ſynochi, ſome diſputes have ariſen concerning the contagious nature of veſicular fever. Moſt foreign writers regard it as contagious, and ſome of the caſes mentioned by Britiſh practitioners ſeem to ſupport this opinion.

On the contrary, many under this diſeaſe, have been admitted into public hoſpitals without communicating it to their fellow patients; and in moſt of the caſes of pemphigus that have occurred in Britain, it has appeared in a ſingle perſon, and ſpread no farther. In none of thoſe mentioned by Dr. Dickſon, Dr. Stewart, Dr. Winterbottom, and Mr. Chriſtie, did it appear contagious, nor was it ſo in the caſe which Dr. Cullen ſaw. Dr. Hall inoculated with the matter of the veſicles without producing the diſeaſe.†

It has heen propoſed to divide pemphigus into two kinds, the one contagious, the other not. The reader will find an attempt of this kind in the 106th paragraph of Burſerius's Inſtitutiones Med. Pract. The contagious pemphigus, he obſerves, is always accompanied with much fever, and ſymptoms

* See the observations of Dr Winterbottom and Mr. Christie.

† See Observations on the Pemphigus Major of Sauvages, by Dr. R. Hall, in Dr. Duncan's Annals of Medicine for the year 1799.

of malignity; whereas in that which is not contagious, the fever is either moderate or abſent. For ſeveral reaſons, however, which will readily ſuggeſt themſelves from what has been said, this diviſion ſeems to be inadmiſſible. It is more than probable, that it has in part ariſen from confounding the cynanche maligna with the ſynochus veſicularis.

The truth ſeems to be, that the veſicular, like other ſymptomatic eruptions, appears both in fevers which are and are not contagious; and it is probable, that like theſe alſo it will ſometimes be propagated with the fever and ſometimes not; but it does not appear, as in the caſe of the miliary eruption, what the circumſtances are which favour its appearance.

3. Of the Treatment of the Veſicular fever.

The ſame prejudices which have for many centuries, influenced the treatment of other fevers, have extended to that of pemphigus. "In Switzerland," ſays M'Bride,* "the phyſi-
"cians began the cure with one or two large bleedings, then
"bliſtered the head, laid cataplaſms on the neck, and endea-
"voured to raiſe ſweats by ſudorific medicines."

As the pemphigus was conſidered a diſeaſe eſſentially different from common fever, particular modes of practice have been tried, and ſpecifics looked for. "In Bohemia," Dr. M'Bride continues, "the only medicine which did ſervice
"was the acetum bezoardicum, and this is ſaid to have cured
"all who took it, while thoſe who truſted to other things
"died." It ſeems more ſurprizing, that Dr. M'Bride ſhould credit this aſſertion, than that Thierry the practitioner who makes it, ſhould either himſelf have been deceived, or wiſhed to deceive others.

The reſult of all that has been written on the treatment of

* See his Introduction to the Theory and Practice of Medicine.

pemphigus, as far as I am capable of judging, ſeems to be, that it is the ſame as in ſimple ſynochus, with the addition of local remedies for the eruption, which in general ſeems very little to modify the fever.

With regard to the local remedies, the larger veſicles are generally opened,* and kept clean; when any have appeared in the mouth and formed ulcers there, demulcent and detergent gargles are employed. When the ulcers are obſtinate, they come under the care of the ſurgeon, and therefore are not to be treated of here.

If there is reaſon to think, that the eruption has ſpread to the alimentary canal, copious draughts of ſome mucilaginous decoction are proper, and when the irritation is conſiderable and prevents ſleep, if the ſymptoms of the fever admit of it, opiates ſhould be given.

SECT. V.

Of the Eryſipelatous Fever.

The Eryſipelas† is defined by Dr. Cullen,

"Synocha duorum vel trium dierum, plerumque cum ſom-

* The propriety of opening them is doubtful.

† Erysipelas is the name given to this disease by the Greeks; by the Romans it was termed ignis sacer, or merely, ignis, by which appellation it is known in many parts of the Continent; but none of these terms have been used in a very definite sense. Sennertus calls it rosa; authors, however, have not adopted this name. By the vulgar of this country it is called the rose or St. Anthony's fire; foreign writers ge-

" nolentia, ſæpe cum delirio. In aliqua cutis parte, ſæpius " in facie, phlogoſis erythema."*

It was obſerved in the Introduction, that although I have arranged the eryſipelas as a variety of ſynochus, becauſe like the foregoing diſeaſes, it has been arranged among the exanthemata, yet if the view there taken of it be juſt, and that it is ſo will I think appear more fully in conſidering its ſymptoms, cauſes, and mode of treatment, it ſhould be regarded as a combination of two diſeaſes of ſynochus, and Dr. Cullen's ſecond ſpecies of phlogoſis, the erythema, and conſequently ſhould have no place in a ſyſtem of noſology. We ſhall here find the eruption forming a much more important part of the diſeaſe than in the preceding varieties of ſynochus, and modifying the general plan of treatment as well as the ſymptoms of the fever.

1. Symptoms of the Eryſipelatous Fever.

Of the Eryſipelatous Eruption.

This eruption appears in the form of a red blotch or ſtain, which ſpreads with more or leſs rapidity. The redneſs ſometimes diſappears on preſſure; ſometimes it does not, ſhewing that the inflammation has ſpread deeper.

It is generally attended with a ſenſe of burning and a pun-

nerally confine the latter appellation to Dr. Cullen's second species of it, which is also termed zona or zoster; and the erysipelas of the face has been called sideratio.

* Phlogosis Dr. Cullen defines, " Pyrexia, partis externæ rubor, " calor, et tensio dolens."

The erythema is his 2d species of phlogosis, which is defined, " Phlogosis colore rubicundo, pressione evanescente; ambitu inæquali serpente; tumore vix evidente, in cuticulæ squamulas, in phlyctænas " vel vesiculas, abeunte; dolore urente."

gent pain, but for the moſt part without tenſion or pulſation; and the inflamed ſkin is not raiſed above that which ſurrounds it. The parts beneath, however, as well as thoſe in the neighbourhood, are generally affected with ſome degree of ſwelling, which often remains after the redneſs has diſappeared or removed to ſome adjacent part; for this eruption is apt to leave, or become leſs conſiderable on, the parts it firſt occupied, when it ſpreads to others. But in this reſpect there is much variety.

After the redneſs has continued for an uncertain time, bliſters of various ſizes ſometimes riſe on the ſkin, generally containing a thin, ſometimes limpid, ſometimes yellowiſh fluid. In ſome caſes the fluid is viſcid,* and inſtead of running out as generally happens, when the bliſter is broken, adheres to and dries upon the ſkin.

In unfavourable caſes theſe bliſters ſometimes degenerate into obſtinate ulcers, which now and then become gangrenous. This, however, is rare, for although it is not uncommon for the ſurface of the ſkin, in the bliſtered places to appear livid or even blackiſh; yet the tendency to gangrene ſeldom ſpreads deep, and generally diſappears with the other ſymptoms.

The red colour changes to yellow as the eruption goes off, and the parts which were not occupied by the bliſters often ſuffer a deſquamation. If the colour of the eruption change from a red to a purple or blackiſh hue, the prognoſis is bad.

When it has ſpread deeper than uſual, ſuppuration ſome times takes place, and it ſometimes renews ulcers which had been long healed.†

The duration of the eruption is very uncertain. In mild

* Tissot's Avis au Peuple.

† See the 6th number of Dessault's Chirurgical Journal.

caſes it often gradually diſappears, or is carried off by ſpontaneous ſweating, in a day or two. In others it continues without beginning to decline for twelve or fourteen days, or longer.

It has obtained different appellations according to the appearance of the eruption, eryſipelas benignum, malignum, gangrenoſum, tuberculoſum, ſcabrum, veſiculoſum, puſtulare, &c.*

The eruption differs conſiderably according to the different parts it attacks. In the mildeſt caſes it appears on the extremities; often on the feet, and then if the febrile ſymptoms are moderate, if the eruption does not ſpread rapidly, and is only attended with a degree of itchineſs or burning, or ſlight pain reſembling the ſtinging of nettles, there is little tenſion, and it will probably be of ſhort duration.

In other caſes, it ſoon extends along the leg, the ſkin over the tibia becoming highly inflamed, ſtretched, and gloſſy, attended with ſharp pains, increaſed by the ſlighteſt touch, often ſhooting along the courſe of the muſcles, with much ſwelling of the limb, which ſometimes leaves behind it an obſtinate œdema. When it attacks the trunk, it is a more ſevere diſeaſe. In the breaſts of women, it is often attended with much pain, the breaſts ſwell, become hard, and ſometimes ſuppurate. The pain is alſo ſevere when it attacks the arm pits. In theſe and other glandular parts it often leaves the glands in a ſtate of induration.†

Upon the whole, the eryſipelatous eruption much leſs frequently attacks the trunk than the extremities. There are

* Burserius's Institut. Med. Pract.

† Erysipelas in glandular parts, Schroeder observes, especially if cold astringent and spirituous applications have been made to it, sometimes leaves behind it schirrus of the part. See Schroeder de Febre Erysipelatosa, in his Opuscula Medica.

two varieties of it, however, which appear on the trunk and deſerve to be particularly mentioned.

The firſt may be termed the eryſipelas infantum. This attacks children ſoon after birth, begins about the umbilicus, and often ſpreads over the whole abdomen.* It is not very uncommon indeed for children to be born with the face or belly, particularly the parts about the umbilicus, uniformly red and ſwelled. It is more common, however, for the eryſipelas to appear a few days after birth, and it ſomtimes makes its firſt attacks upon the genitals. The inflamed ſkin is hard, and very painful to the touch.

This ſpecies of eryſipelas is moſt apt to terminate in gangrene. The belly often becomes uniformly tenſe, and ſphacelated ſpots make their appearance. Dr. Bromfield relates a caſe of this ſpecies of eryſipelas in the extremities, in which the gangrene ſpread ſo deep that ſeveral joints of the fingers were loſt. Any appearance of gangrene in it affords a bad prognoſis.

Suppuration alſo, though more rarely, occurs in the eryſipelas infantum.

It appears from diſſections mentioned by Dr. Underwood, that the inflammation ſometimes ſpreads to the abdominal viſcera.

The other variety of eryſipelas of the trunk, which deſerves particular notice, is Dr. Cullen's ſecond ſpecies, the eryſipelas phlyctænodes.†

* See an account of this ſpecies of erysipelas in two papers, one by Dr. Bromfield, and another by Dr. Garthshore, in the 2d vol. of the Medical Communications, and also in Hoffman's Practice of Medicine, and in Dr. Underwood's Treatise on the Diseases of Children.

† It is this species of erysipelas which has been termed zona or zoster. In English it is called the shingles. See the 2d vol. of Burserius's Instit. Med Pract. Schroeder de Feb. Erysip. in his Opusc. Med. and Vogel Prælect. Acad. de Cog. et Cur. Morb.

This diſeaſe, it was obſerved in the Introduction, is not very properly ranked as a variety of eryſipelas, the appearance of the eruption differing conſiderably from that above deſcribed. Inſtead of appearing an uniformly inflamed ſurface, it conſiſts of a number of little puſtules,* which in a ſhort time have veſicles formed on them. It generally ſurrounds the trunk, and appears like a red belt thrown round the body a little above the umbilicus, from which it has gotten the name of zona. It is not always, however, confined to this part, ſometimes it ſpreads round the neck and ſhoulders.

This is generally regarded as more dangerous than other forms of eryſipelas affecting the trunk and extremities. And Schroeder indeed, though ſurely without reaſon, regards it as the moſt fatal of all the varieties of this diſeaſe. It is certainly by no means ſo in this country.†

When the eryſipelatous eruption attacks the face and head, it is moſt dangerous. It has the ſame appearance as on other parts of the body.

A red ſpot appears on ſome part of the face, generally of no great extent, which ſpreads till it ſometimes covers, not only the whole face, but the ſcalp alſo, now and then deſcending a conſiderable way down the neck, and occaſioning what Tissot calls, "Eſquinancie tres facheuſe."

As in other caſes, it often leaves the part it firſt attacked, when it ſpreads to neighbouring parts.

The face and frequently the whole head ſwell,‡ and the tumid eye-lids ſometimes ſuppurate.

* When narrowly inspected, however, the erysipelas on other parts of the body sometimes has more or less of the same appearance.

† Dr. J. C. Smith's observations on Inflammation in the Lond. Med. Communications, vol. 2.

‡ See Sydenham de Feb. Erysipel.

The duration of the eruption on the face, as on other parts of the body, is various. It generally lafts eight or ten days, fometimes longer. Deffault, in his Surgical Journal, mentions a cafe in which it lafted 23 days. The uncertainty of the duration of fymptomatic eruptions is one of the circumftances in which they differ from the exanthematic.

The greater danger of eryfipelas of the face, arifes chiefly from the inflammation being apt to fpread to the brain. There is reafon indeed to believe, from fymptoms that will prefently be mentioned, that the inflammation fometimes attacks the brain at the fame time, or even before it appears on the face.

This form of eryfipelas fometimes fpreads to the fauces and along the alimentary canal, which is alfo a very alarming accident. Sometimes, Schroeder* obferves, it fpreads to the nares, trachea, and thence to the lungs, producing all the fymptoms peculiar to inflammation of thefe parts.

The inflammation fometimes removes fuddenly to diftant parts, what phyficians have termed Metaftafis takes place. Leaving the fkin, it feizes on fome of the vifcera. The vifcus moft commonly affected is the brain; but for the moft part, as Dr. Cullen remarks, the brain is not affected by metaftafis, but merely by a fpreading of the inflammation.

In metaftafis of this difeafe, the inflammation alfo now and then attacks the inteftines, liver, uterus, and bladder. I fhall hereafter have occafion to make fome obfervations on attempts which have been made, to diftinguifh eryfipelatous inflammation of internal parts, from what is called phlegmonous. In the latter, the inflammation extends deeper, and differs otherwife from the eryfipelatous, particularly in being more apt to terminate by fuppuration.

* Opuscula Med.

Sometimes eryſipelas is not confined to any particular part of the ſkin, but ſpreads equally over the face, trunk, and extremities.* This, which is very rare, moſt frequently happens in the eryſipelas infantum.

In certain countries this diſeaſe ſeems moſt diſpoſed to attack particular parts of the body, thus Sauvages obſerves, that in Germany, the eryſipelas generally ſeizes on the groin, thighs, and arm-pits; in England and in France, it more frequently attacks the face.

It appears from what has been ſaid, that the prognoſis is particularly influenced by the ſeat of the inflammation; in the extremities it is ſafer than in the trunk, in the trunk than in the face, and cet. par. the more extenſive the inflammation, the greater the danger.

Suppuration in general is to be regarded as unfavourable. It frequently, eſpecially in the face, leaves troubleſome ulcers, and is ſeldom of a favourable kind.† Quarin, however, on the authority of Strack, mentions an epidemic eryſipelas, in which thoſe only recovered in whom ſuppuration took place. We have reaſon to fear ſuppuration, when the inflammation ſpreads deeper than uſual; which is known by the redneſs not diſappearing on preſſure, the pains being deep ſeated, and the ſwelling conſiderable and hard.

It was obſerved above, that a degree of gangrene often appears on the bliſtered parts; and that if the habit of body be good, and particularly if the eruption ſtill retains the florid appearance in other parts, it is generally ſuperficial; but if the patient is debilitated, eſpecially if he is advanced in life,‡

* Vogel, Schroeder.

† See an account of the Epidemic Erysipelas, by Tissot and others.

‡ See the observations of Platerus, on what he terms Macula Lata.

and the eruption in general aſſumes a purple or livid hue, the mortification often ſpreads deep, and the danger is very great.*

Of the Symptoms which precede or attend the Eryſipelatous Eruption.

The eryſipelatous eruption is often preceded by the ſame ſymptoms which precede the other eruptions we have been conſidering; and like theſe alſo, it ſometimes appears without being preceded by any peculiar ſymptoms.

The oppreſſion and anxiety are often conſiderable, and frequently attended with other ſymptoms denoting derangement of the primæ viæ; a bitter taſte in the mouth, foul tongue, pain of the ſtomach, eructations, dyſpnœa, head-ach, confuſion of thought, vertigo, nauſea, and even vomiting and purging, frequently of bile. Moſt of the foregoing eruptions we have found connected with the ſtate of the primæ viæ; this connection is not more remarkable in any than the eryſipelatous.†

It is very frequently preceded by a degree of coma, eſpecially when it is about to appear on the face, and ſometimes, though but ſeldom, with delirium. It is from the ſtate of the brain in eryſipelas of the face, that we chiefly collect the prognoſis. When neither delirium nor coma precede the eruption, nor ſupervene after its appearance, there is little danger. But when it is preceded by a conſiderable degree of either, and ſtill more when they rather increaſe than abate after its appearance, there is reaſon to believe that the inflammation has ſpread to the brain, and the danger is great.

When they are conſiderable from the beginning of the diſeaſe, it indicates that the inflammation firſt ſeized on the

* Vogel de Cog. et Cur. Morb.

† See the observations of Schroeder, Tissot, Burserius, Dr. Smith and others on this disease.

internal parts, and then, in a nosological point of view, the disease must be regarded in the same light as when the external inflammation is the first symptom; that is, it must be regarded simply as a case of phlegmasia; and we shall find that the treatment which experience has established, is the same as in other phlegmasiæ.

The affection of the brain, in general, is not relieved by the appearance of the inflammation externally, the coma often increasing as the inflammation extends; so that as this inflammation, when it makes its first attack on the face, sometimes spreads to the brain without leaving the face; when it makes its first attack on the brain, it is apt in like manner to spread to the face without leaving the part it first occupied, which always affords an unfavourable prognosis.

From what was said of the tendency of erysipelas to attack other internal parts, it will readily be perceived, that the symptoms which occasionally attend this eruption must be very various. We shall have occasion, in the next volume, to consider at length the various symptoms which accompany inflammation of the different viscera.

Of the Febrile States in which the Erysipelatous Eruption is most apt to appear.

The erysipelatous eruption differs from the eruptions we have been considering, and agrees with inflammations, in appearing more frequently in synocha than in typhus. On this account it generally appears early in fevers; so that, although we find authors differing about the time of its appearance, it seems to be generally admitted, that it does not often appear later than the fourth or fifth day; but within this period, the time of its appearance is as uncertain, as that of any other eruption which has been mentioned.

Like the appearance of other inflammations it generally increaſes the febrile ſymptoms,* the pulſe becomes harder, the noſtrils, fauces, and ſkin more parched, and the breathing more laborious; and when the fever has begun to aſſume the form of typhus before the eruption ſhews itſelf, if the patient's ſtrength is not much reduced, it reſumes that of ſynocha, the ſtrength and the fullneſs of the pulſe increaſing. Other inflammations ſupervening on the typhus mitior, often have the ſame effect. All the preceding eruptions, on the contrary, tend to increaſe the ſymptoms of debility.

The more the febrile ſymptoms, and particularly the coma or delirium increaſe on the appearance of the eruption, the more unfavourable is the prognoſis.

When the eruption is about to diſappear favourably, it generally aſſumes a yellowiſh hue, and all the ſymptoms connected with it, gradually ſubſide.

Such is the general courſe of eryſipelas, and the circumſtances which influence the prognoſis. But Van Swieten juſtly obſerves, that we muſt always be prepared for ſudden changes in this diſeaſe; and that caſes apparently unaccompanied by danger, have often, all at once, undergone ſuch a change, that death was hourly expected, the inflammation having attacked the membranes of the brain. It ſometimes happens, ſays Tiſſot, that without any apparent fault of the patient or practitioner, the inflammation ſuddenly changes its ſeat, attacking the brain or lungs, and then the patient is carried off in a very ſhort time, although, previous to the metaſtaſis, there

* In some rare cases, however, the erysipelatous eruption has proved critical. The reader will find cases mentioned by Van Swieten and others, in which the fever ceased on the appearance of this eruption. In these cases, of course, the inflammation is too slight to occasion fever.

ſeemed little or no danger. Theſe obſervations I have ſeen ſtrikingly confirmed.

It has been obſerved above, that the eryſipelatous eruption often makes the fever reſume the character of ſynocha after the typhus had commenced; this, however, is only where the ſymptoms of typhus are not ſtrongly marked. When this eruption appears in the typhus gravior, inſtead of changing the nature of the fever, the eruption, as I have frequently witneſſed, partakes of its nature, ſhewing a ſtrong tendency to gangrene, and increaſing the debility. The diſeaſe is then, what has been termed by foreign authors, febris eryſipelatoſa maligna or peſtilens; in its exquiſite form it is ſeldom met with in this country. In different parts of the Continent it has ſometimes been epidemic, as at Thouloufe, in the year 1716, where it appeared in ſo dreadful a form, that it was compared to the plague, and proved little leſs fatal. This epidemic is analogous to thoſe mentioned by De Haen, * Bartholine, † Profeſſor Silvius de la Boe, ‡ and others, in which an inflammation of the ſtomach and duodenum accompanied the fever.

The eryſipelatous eruption is apt to appear in other diſeaſes. Among the chief of theſe, Schroeder enumerates dropſy, jaundice, wounds, particularly thoſe of the cranium, § injuring the membranes of the brain, fractures, or conſiderable abſceſſes in any part of the body. Eryſipelas from wounds, Quarin obſerves, affords a bad prognoſis. Eryſipelas alſo fre-

* Ratio Medendi.

† Hist. Anatom. Rar. hist. 56.

‡ Prax. Med. Append. tract. x.

§ Gunshot wounds are particularly apt to produce erysipelas, and all wounds, Dr. Smith observes, which are attended with much laceration.

quently attends ſchirrus, and cancerous, or other conſiderable ulcers. It alſo frequently accompanies diſeaſes, occaſioning derangement of the primæ viæ, particularly worms, and is often one of the effects of poiſons.

Various diviſions of this diſeaſe have been adopted by Celſus, Fernelius, Hoffman and others, to which I have already had occaſion to allude, founded on the appearances of the eruption; according as the inflammation is more or leſs ſuperficial, as veſicles do or do not form, or leave ulcers behind them; and the ulcers being ſuperficial or deep, well conditioned or otherwiſe, have alſo afforded other uſeleſs diviſions.*

2. Cauſes of the Eryſipelatous Fever.

In the cauſes, as in the ſymptoms of eryſipelas, we ſtill find it partaking of the nature of the phlegmaſiæ; with theſe it agrees, and differs from ſymptomatic eruptions, in having been known from the earlieſt times. The young, and thoſe in the vigour of life, are moſt diſpoſed to this diſeaſe, eſpecially thoſe of a ſanguine and choleric temperament, and of a phlethoric habit; and it is moſt apt to attack thoſe who have formerly laboured under it.

One of the moſt frequent of the exciting cauſes, particularly in thoſe who have formerly laboured under it, is cold, eſpecially if alternated with heat, as in variable weather. It is ſometimes the conſequence of exceſſive heat, too full a diet, particularly the abuſe of fermented liquors, the ſuppreſſion of any habitual diſcharge, as the drying up of an iſſue, ſuddenly

* See the 3d chap. of the 4th book of the Pathology of Fernelius, and Schroeder's Opusc. Med. See also a division of erysipelas equally objectionable, in Burserius's Institut. Med. Pract.

checking hemorrhois, abſtaining from habitual blood-letting, or any other cauſe of plethora.* It is frequently re-produced by local irritation, whether chymical or mechanical.

In ſome of its other cauſes the eryſipelas ſeems to bear a ſtronger analogy to ſymptomatic eruptions. It has been obſerved of all of theſe, that they ſeem frequently to ariſe from derangement of the primæ viæ. We ſhall find, however, that the phlagmaſiæ even when affecting diſtant parts, more frequently ariſe from this cauſe, than has uſually been ſuppoſed.† Purging, ſays Tiſſot, is in general neceſſary in eryſipelas, to evacuate the corrupting bile from the primæ viæ, which is the moſt frequent cauſe of this diſeaſe. Such is the connexion of this diſeaſe with the primæ viæ, Schroeder obſerves, that we often wholly remove it by removing the irritating matter, which is generally bilious, from the ſtomach and inteſtines.‡

* Schroeder mentions several instances of erysipelas recurring at the time the menstrual discharge should have appeared. This is not very unusual.

† It will appear from a variety of observations, that inflammations of the viscera, of the thorax in particular, are apt to arise from various affections of the abdominal viscera. See an Account of the Pleuritis Verminosa, in the 43d, 44th, and 45th Sections of the 21st Epistle of Morgagni. See also an Account of Dissections by Wendt in his Treatise de Pleuritide in Sandifort's Thesaurus, an Account of the Pleuritis Biliosa in Bianchus's Historia Hepatica, and in the fifth volume of the Edinburgh Medical Essays, and several papers, in the second volume of Haller's Disputationes ad Morb. Hist. et Cur. pertinent, on the Pneumonia Putrida which seems often influenced, if not caused, by affections of the primæ viæ.

‡ Schroeder has been at the pains to collect a number of authorities with a view to prove that this disease frequently arises from the presence of irritating matter in the alimentary canal; the fact indeed is generally admitted. We are referred to the works of Hippocrates,

The redundancy of bile in the ſtomach and inteſtines ſo frequently accompanying eryſipelas, gave riſe to the hypotheſis of its being occaſioned by a bilious ſtate of the fluids, a doctrine * long maintained, and adopted by ſo late an author as Quarin. But irritation of the primæ viæ from other cauſes alſo produces eryſipelas, and other eruptions, we have ſeen, not ſuſpected to depend on a bilious ſtate of the fluids, ariſe from this cauſe.

It is perhaps by affecting the ſtate of the primæ viæ, that the paſſions of the mind, particularly rage, terror, and vexation, frequently excite eryſipelas, and that pregnancy diſpoſes to it.

Eryſipelas ſeems alſo now and then to ariſe from affections of the other abdominal viſcera, particularly thoſe of the liver. The eryſipelas infantum in particular has been obſerved to ariſe from this cauſe.

It is not contagious, but like ſymptomatic eruptions, as well as certain phlegmaſiæ, often attends the prevailing epidemic. It has already been obſerved, that ſuch epidemics ſeldom occur in Britain. Dr. Bromfield, in his Surgical Caſes and Obſervation, mentions an eryſipelas of the head, which was epidemic for two years, in which it was neceſſary to employ cordials and Peruvian bark, evacuations generally proving fatal. Inſtances of epidemic eryſipelas are to be found in the works of Sydenham, Burſerius, Tiſſot, and others.

Galen, Ballonius, Hoffman, Lieutaud, Tissot, Baglivius, Bianchus, Friend, Richa, Mead, Brocklesby, Zimmerman, Molinarius, and others of less note, to which Quarin, Vogel, Burserius, Dessault, and other late writers may be added Dessault in his Surgical Journal relates several striking cases of erysipelas arising from, or supported by, derangement of the primæ viæ.

* See this doctrine considered at length in Bureau's Treatise on Erysipelas.

It is remarkable that eryſipelas ſomtimes returns periodically, making its attack once or twice in the year, or oftener; when this happens to old people, and thoſe of a bad habit, it gradually exhauſts the ſtrength. Hoffman relates ſeveral caſes of this kind. In one of theſe, the return of eryſipelas was prevented by an iſſue and low diet, two of the moſt powerful means, we ſhall find, of preventing the recurrence of the phlegmaſiæ. Vogel and Schroeder mention caſes of the ſame kind. It has been remarked as of the gout, that thoſe who are ſubject to eryſipelas are often exempt from other diſeaſes.

3, Of the treatment of the Eryſipelatous Fever.

From what has been said of the ſymptoms and cauſes of eryſipelas it appears, that in thoſe caſes where the affection of the ſkin has been preſent from the beginning, or where the diſeaſe has been attended from the firſt with coma or delirium, it is to be regarded as a phlegmaſia; and univerſal experience has aſcertained, that the treatment in theſe caſes is the ſame as in the other phlegmaſiæ; it will, therefore, be conſidered when we come to speak of theſe diſeaſes.

We are at preſent to inquire how far the appearance of the eryſipelatous eruption in the progreſs of ſynochus, influences the treatment of this fever.

The appearance of the eryſipelatous eruption in the firſt ſtage of ſynochus, that is, while the inflammatory ſymptoms prevail, occaſions but little change in the mode of treatment, except that as the inflammatory affection of the ſkin increaſes the ſymptoms, the means of reducing the excitement muſt be employed with greater aſſiduity.

They are alſo ſafer than in other ſpecies of ſynochus. It has been obſerved, that if the typhus has commenced before the appearance of this eruption, the ſymptoms of ſynocha are

often recalled by it. They are not only recalled, but maintained, for the typhus which ſupervenes towards the end of an eryſipelatous fever is leſs conſiderable, in proportion to the preceding ſymptoms, than in other varieties of ſynochus; the eryſipelatous fever in this reſpect alſo approaching to the nature of the phlegmaſiæ. Sydenham did not ſcruple to employ blood-letting in eryſipelas, almoſt as freely as in any of theſe diſeaſes.

How the evacuations are to be regulated by the ſtate of the local affection will appear more fully in treating of the phlegmaſiæ. All that need be ſaid at preſent is, that the more ſevere the local affection, that is, the greater the ſwelling, heat, pain, and the further the inflammation extends, eſpecially if its ſeat be the head or trunk, and the greater the coma or delirium, the more powerful muſt the antiphlogiſtic meaſures be, provided the pulſe continues full and ſtrong, ſtill more if it be hard, which is generally the caſe when the local affection is conſiderable.

We muſt not, however, employ evacuations as freely in the caſe before us, as when eryſipelas appears as a ſimple phlegmaſia, particularly if the fever has ariſen from contagion, or ſhewn a tendency to typhus. Beſides the eryſipelatous, like other eruptions which appear in continued fever, has been known ſuddenly to recede, an alarming train of ſymptoms, of which debility is the characteriſtic feature, ſupervening. This is a rare occurrence; as in ſimilar caſes, however, it is moſt apt to happen where debilitating cauſes have been applied. It is alſo to be remembered, that when retroceſſion takes place, the patient is ſeldom out of danger till the eruption is recalled, which is done with the greater difficulty the more he is debilitated.

The advantages of blood-letting over other evacuations for moderating excitement have been pointed out; but eryſipelas

being often increaſed, if not cauſed by derangement of the primaæ viæ, evacuations by the bowels ſometimes have a greater effect in allaying this inflammation, than blood-letting. We ſhall find, in conſidering the phlegmaſiæ, that in all inflammatory affections of the head, purging is particularly uſeful; in eryſipelas of the head, therefore, it is doubly indicated; and in all forms of the diſeaſe, when the ſymptoms are moderate, it generally renders the employment of blood-letting unneceſſary.

Schroeder juſtly obſerves, that catharſis ſhould always precede blood-letting in the eryſipelas. It is, however, to be kept in view, that if the local affection proceeds from the ſtate of the primæ viæ, the beneficial effects of purging will very quickly be obſerved, ſo that if it does not ſoon produce a favourable change, we ſhould not perſevere in employing it to a greater extent, than would have been proper had no eryſipelas ſupervened. Frequent purging, ſays Quarin, eſpecially where the habit is debilitated and the pulſe frequent and ſmall, renders the eryſipelas more alarming; but even where the pulſe is ſtrong and hard, if the firſt exhibition of cathartics is not attended with beneficial effects, it is better, for the reaſons given in ſpeaking of the modus operandi of blood-letting, to reduce the excitement by this remedy, than by repeated purging. And with regard to the opinion, that veneſection is apt to occaſion a retroceſſion of the eruption, or a mataſtaſis to internal parts, the obſervations made above on ſimilar objections to it in other eruptive synochi, are applicable here.*

If the eryſipelatous eruption appears at an early period of

* When the eruption recedes, blisters and cordials, with diaphoretics, have been found the best means of restoring it. See the observations of a variety of authors, particularly those of Hoffman, M'Bride and Schroeder.

the fever, vomiting ſhould precede catharſis, except in eryſipelas of the head, in all caſes of which an emetic is at leaſt a doubtful remedy.

While we endeavour to evacuate the morbid contents of the alimentary canal, we ſhould at the ſame time endeavour to correct what may ſtill remain, by the uſe of acids or antacids, according as bile or acid prevails.

The ſemicupium and ſinapiſms applied to the feet, have been particularly recommended in eryſipelas of the head attended with coma; but theſe, and other parts of the treatment, will be conſidered in ſpeaking of phlogoſis and phrenitis.

It has been obſerved, that the eryſipelatous eruption ſometimes ſhews itſelf after the typhus is formed, or even far advanced. The combination is then, we have ſeen, of a very different nature.

As the appearance of the eryſipelatous eruption in ſynocha renders the antiphlogiſtic mode of treatment more neceſſary; ſo, on the other hand, its appearance in the typhus gravior, renders the invigorating plan more ſo. Bark, wine, and the mineral acids are ſtill the remedies on which we chiefly depend.*

We muſt be cautious, however, not to give either bark or wine while any degree of the ſynocha ſtill prevails, by which Dr. Smith obſerves, he has often ſeen gangrene induced, inſtead of prevented. The typhus muſt be completely formed, and the florid appearance of the inflammation beginning to change, before the bark can be freely exhibited.

* See an Account of the Malignant Erysipelas in the works of foreign writers, Burserius, Quarin, &c.

BOOK III.

OF THE EXANTHEMATA.

The claſs of idiopathic fevers was divided into three orders,* intermitting and remitting fevers, continued fevers, and the exanthemata. The laſt of theſe we are now to conſider.

It appears from what was ſaid in the Introduction, that the fever in this order of diſeaſes is as truly idiopathic as in either of the foregoing; and in laying down the practice we ſhall find it treated as ſuch.

Among the orders of idiopathic fevers we readily perceive a ſtriking analogy. Between remitting and continued fevers it is impoſſible to draw the line of diſtinction, and the exanthemata, we ſhall find, bear a ſtrong reſemblance to the eruptive fevers we have been conſidering. The whole forms evidently a natural claſs of diſeaſes, the arrangement, which has been adopted, pointing out the manner in which its different orders run into each other.

The exanthemata were defined in the Introduction, contagious diſeaſes beginning with an idiopathic fever, at a certain period of which, puſtules, often in conſiderable number, appear on the ſkin.

This order comprehends ſix ſpecies: Small-pox, Chicken-pox, Meaſles, Scarlet Fever, Plague, and Nettle-raſh.

* See the Introduction.

CHAP. I.

Of the SMALL-POX.*

THE Small-Pox is defined by Dr. Cullen,

"Synocha contagiosa, cum vomitu et ex epigastrio presso, "dolore. Tertio die incipit, et quinto finitur, eruptio papu- "larum, phlegmonodearum; quæ spatio octo dierum, in sup- "purationem, et in crustas demum abeunt, sæpe cicatrices "depressas sive foveolas in cute relinquentes."

Such are the distinguishing marks of the disease as it most commonly appears, but we constantly meet with cases to which this definition will not apply. We shall find that the eruption does not uniformly appear on the third day, nor does it always cease on the fifth, and in many cases the matter of the pustules remains so crude, that they can hardly be said to have undergone suppuration. Even the pain of the stomach increased on pressure and vomiting do not constantly attend the eruptive fever. Nay, in certain cases, there has been no eruptive fever at all, the pustules appearing without any previous disease. But the definition just quoted, marking the common course of the disease, is perhaps the best that can be given.

* The small-pox is termed by medical writers, Variola or Febris Variolides.

I have in the Preface given my reasons for detailing the symptoms of small-pox at considerable length, notwithstanding there is reason to hope that this disease will be every year becoming less frequent, and at no very great distance of time perhaps, will cease to exist.

The ſmall-pox has been long divided into diſtinct and confluent. The former is defined by Dr. Cullen,

" Variola, puſtulis paucis, diſcretis, circumſcriptione circu-
" laribus, turgidis, febre, eruptione facta, protinus ceſſante."

The diſtinct ſmall-pox occaſionally varies from that deſcribed in the foregoing definitions, in the following circumſtances.

Sometimes the matter of the puſtules, inſtead of being purulent, is a colourleſs fluid. This variety is termed Variola Diſcreta Cryſtallina.

It ſometimes happens, that ſmall veſicles appear in the interſtices of the puſtules. This variety has been termed Variola Diſcreta Veſicularis.

Sometimes theſe veſicles are empty, or the matter of the puſtules themſelves diſappears leaving them empty, the diſeaſe is then termed Variola Diſcreta Siliquoſa.

The puſtules ſometimes remain ſolid throughout; the ſolid puſtules either appearing alone, or being interſperſed with others of a more common appearance. This is a rare form of the diſeaſe. It has been termed the Warty Small-pox, or Variola Verrucoſa.*

When the puſtules are of the common appearance, but very numerous, yet upon the whole diſtinct and unattended by any of the ſymptoms juſt mentioned, the diſeaſe has been called Variola Adjuncta; and this may be regarded as the connecting link between the diſtinct and confluent ſmall-pox.

All theſe varieties are attended with more danger than the ſimple diſtinct kind, where the puſtules are few in number, and ſuppurate favourably. The empty veſicles indeed ſometimes appear in very mild caſes.

* Cleghorn's Diseases of Minorca, Burserius's Institut. Med. Pract. Mead De Variolis, Friend's Epistola de quibusdam Variolarum Generibus, &c.

Many more varieties of diſtinct ſmall-pox are enumerated by authors. Sauvages, † for inſtance, enumerates twelve ſpecies, but moſt of them are marked by ſymptoms which cannot be regarded as characterizing different ſpecies of the diſeaſe.

Dr. Cullen defines the confluent ſmall-pox,

"Variola, puſtulis numeroſis, confluentibus, circumſcrip-
" tione irregularibus, flaccidis, parum elevatis, febre poſt
" eruptionem perſtante."

Although, as expreſſed in this definition, the number of puſtules in the confluent, is generally much greater than in the diſtinct, ſmall-pox, yet it ſometimes happens that, though numerous, the puſtules remain diſtinct; and, on the other hand, but more rarely, that, though few, they appear in cluſters and run together.

The nature of the diſeaſe is beſt known, and conſequently its name ſhould be determined, from obſerving the ſtate of the face, the danger being better eſtimated by the number and appearance of the puſtules there, than on any other part of the body. If they be diſtinct and few in number on the face, even, although, in ſome degree confluent elſewhere, the diſeaſe is termed the diſtinct ſmall-pox, and the danger is inconſiderable. If, on the other hand, there be a load of puſtules on the face, if they run into each other ſo that it appears uniformly of a whitiſh colour, as if, to uſe Sydenham's expreſſion, it were covered with parchment, whatever appearance the eruption may have on other parts of the body, the diſeaſe is termed confluent, and the danger is conſiderable.

Dr. Sims, in his Account of Epidemical Diſeaſes, even obſerves, that the danger was not to be eſtimated ſo much from the number of ſmall-pox on the whole face, as from that on the upper part of the forehead, about the junction of

† The Nosologia Methodica of Sauvages.

the hairy-ſcalp with the ſmooth ſkin. If any were diſtinct there, and filled properly, little was to be apprehended.

It is evident, from what has been ſaid, that we can draw no line of diſtinction between the diſtinct and confluent ſmall-pox. In the worſt kinds of the confluent, there are generally ſome diſtinct puſtules. In caſes which deſerve the name of diſtinct, we often obſerve two or more puſtules running together.

The more numerous and confluent the puſtules are, the more the appearance of the puſtule itſelf departs from that of the moſt benign ſmall-pox.

The confluent ſmall-pox varies in the ſame manner as the diſtinct; hence the names variola confluens cryſtallina, veſicularis, filiquoſa, verrucoſa, &c. all which varieties are attended with great danger. Moſt of the ſymptoms expreſſed by theſe terms are more apt to attend the confluent, than the diſtinct form of the diſeaſe.

In the confluent, the puſtules ſometimes appear almoſt black from a degree of mortification taking place, and blood being mixed with the matter they contain; hence one variety is termed Variola Confluens Nigra.

When blood is effuſed into the cavities of the puſtules without giving them a black appearance, the diſeaſe has been termed Variola Sanguinea.

When the puſtules are here and there collected together in cluſters, with few in the intermediate ſpaces, it has been termed Variola Confluens Corymboſa.

When petechiæ appear between the puſtules, it is called Variola Confluens Petechialis, or Maligna.

After laying before the reader the ſymptoms of the regular ſmall-pox, it will be neceſſary to take notice of ſome of its principal varieties, which may properly enough be termed anomalous.

SECT. I.

Of the Symptoms of the Small-Pox.

THE ſymptoms of this diſeaſe are ſo various, that to avoid confuſion, it will be proper to conſider thoſe of the diſtinct and confluent ſmall-pox ſeparately.

The former has been divided into the ſimple diſtinct, and contiguous diſtinct; the latter into the ſimple confluent, and putrid confluent; a diviſion of no uſe. The contiguous are only the worſt form of the diſtinct; and the putrid the worſt form of the confluent.

1. Of the Symptoms of the Diſtinct Small-pox.

Small-pox attacks in a manner ſimilar to the fevers we have been conſidering.

The patient ſometimes, though rarely, complains of ſickneſs for ſeveral days before the fever is diſtinctly formed. The latter generally comes on about mid-day, with the ſymptoms of a cold ſtage, frequently attended with a conſiderable degree of drowſineſs.

If the patient is old enough to give an accunt of his feelings, he complains of languor and liſtleſſneſs, with the other uneaſy ſenſations that attend the commencement of ſimple fever, which are ſoon followed by conſiderable heat, thirſt, and the other ſymptoms that characterize thoſe fevers in which the ſynocha prevails.

The ſkin and fauces are parched, the bowels coſtive, the urine at firſt pale, afterwards more ſcanty and high-coloured, and hemorrhagies are frequent, particularly from the noſe. When the ſmall-pox is of the diſtinct kind, the fever which precedes the eruption, and on that account is termed the eruptive fever, is always a ſynocha, and the more moderate the ſymptoms of excitement, the more favourable is the prognoſis.

Such are the ſymptoms which this fever has in common with many others, but certain ſymptoms generally attend, by which it may be known before the eruption makes its appearance.

Severe pains of the back, limbs, and loins, coma,* in adults an unuſual tendency to ſweat,† and a coldneſs of the extremities in children, have been ranked among its diagnoſtic ſymptoms. ‡ But the moſt unequivocal are thoſe mentioned by Dr. Cullen in the foregoing definition, the vomiting and pain of the ſtomach increaſed on preſſure. Even theſe, however, do not always attend.§ The vomiting is frequently bilious. ‖

A little before the appearance of the eruption, ſome change in the ſtate of the ſymptoms generally takes place.

* Bang obſerves, that coma is moſt apt to ſupervene in this diſeaſe, in the vigour of life. Acta Societ. Med. Hafn.

† Sydenham ſays, he never obſerved this ſymptom in children either before or after the appearance of the puſtules.

‡ Dr. Walker's Treatiſe on the Small-Pox.

§ See the obſervations of Van Swieten (in his Commentaries) and others, on the diagnoſis of this fever.

‖ It is difficult to ſay on what foundation Dr. Thomſon has aſſerted that the vomiting is moſt frequently bilious in women and children. See Dr. Thomſon's Treatiſe on the Small-pox.

An epileptic fit at this period, if the child has teethed, may always be regarded as the forerunner of the pustules. If it only occurs once or twice it is hardly to be regarded as unfavourable.* Instead of the fit, children sometimes have a grinding of the teeth, and convulsive twitchings about the mouth and other parts of the face. The fever at this period frequently suffers an exacerbation, the lips are edged with inflammation, the eyes glare and cannot endure the light, the face glows, there is a considerable increase of temperature, the skin and fauces become parched, and coma, when it has not shewed itself at an earlier period, frequently supervenes. Cramps in the legs, and a severe pain in the back also sometimes precede the eruption. Few of these symptoms, however, are observable in mild cases; the coma and cramps of the legs generally forebode a copious eruption.

In the distinct small pox the eruption generally appears towards the end of the third day, or the beginning of the fourth, counting from the commencement of the febrile symptoms. If we class together all kinds of small-pox, we shall perhaps find the third day the mean time of its appearance.† The later the eruption the more favourable is the prognosis.

* Epileptic fits have sometimes, though rarely occurred at a late period of the distinct small-pox. The son of Lord Sunderland, inoculated by Mr. Maitland soon after the introduction of inoculation into England, died of an epileptic fit after the greater part of the pustules were dried off. See Woodville's History of Inoculation.

† Nothing can be more vague than the manner of ascertaining the period of the eruption. The eruption is said to happen on the second, third, fourth, &c. day, whether it occurs in the morning or evening of these days, and whether the accession of the fever has been in the morning or evening. Great acuracy in this respect, however, would not be of much consequence. It has been proposed to make every day consist of 24 hours in computing the appearance of the eruption. See Dr. Thompson's Treatise on Small-pox.

The puſtules on their coming out are ſmall red points, appearing firſt on the face and hairy ſcalp, then on the neck, and at length over the whole body. The patient is often affected with ſneezing as ſoon as the puſtules make their appearance, which continues to recur while they are coming out. The ceaſing of this ſymptom has been regarded as a ſign of the eruption being completed.

About the fifth or ſixth day, counting from the commencement of the fever, that is, the ſecond or third of the eruption, a little veſicle, which appears depreſſed in the middle, is ſeen on the top of each puſtule, containing a matter nearly colourleſs. For two or three days the veſicles increaſe in breadth, the matter gradually aſſuming the purulent appearance. About the eighth day of the diſeaſe they become ſpherical, and the puſtules are completely formed; being then very itchy, hard and prominent, and almoſt terminated by a point.

When the puſtules are more numerous, although benign, they neither riſe ſo high nor are ſo much pointed, as when fewer in number.

In the moſt benign ſmall-pox, from their firſt appearance they are ſurrounded with a perfectly circular inflamed margin. When the puſtules are more numerous, though ſtill of a favourable kind, the margin is leſs exactly circular. Theſe margins coaleſcing in places where the puſtules are crowded, give a red colour to the ſkin lying between them, which is always a favourable appearance.

In the mildeſt caſes, no puſtules appear after the end of the firſt day of the eruption, or the ſecond at furtheſt. In caſes where they are about to be numerous, they often continue to make their appearance for a day or two longer.

About the eighth day, when the puſtules are pretty numerous, the face ſwells and is often affected with lancinating pains.

The ſwelling ſometimes extends to the whole head, the eyelids ſeem as if diſtended with a fluid, and are often ſo much enlarged as entirely to cloſe the eyes.

When the eyes are much affected from the beginning, the ſight is ſometimes loſt, generally in conſequence of one or more puſtules forming on the cornea. Puſtules are more apt to appear on the ſclerotica, where they are leſs to be dreaded.

When the tumefaction of the face begins to ſubſide, which happens about the tenth or eleventh day, the hands and feet ſwell, which in the ſpace of ſome days ſubſide in like manner.

The ſwelling is inconſiderable in mild caſes: at the ſame time it is not to be overlooked, that when the other ſymptoms are ſevere, if it is not in exceſs, it is to be regarded as favourable.

As the diſeaſe advances, the matter of the puſtules becomes by degrees more opaque, thick, white, and at length yellow.

When the puſtules are very numerous, it is thinner and not ſo yellow.

About the eleventh or twelfth day, ſtill counting from the commencement of the fever, the puſtules have gained their full ſize, which differs a little in different epidemics, but is generally about that of a pea. A dark ſpot appears on each. From being ſoft and ſmooth, they become rough and throw out a yellow matter. They now begin to ſhrink, and the matter drying forms a ſmall cruſt. Sometimes only part is thrown out, which, together with what remains, hardens; and, in a few days, falls off, leaving the ſkin in the places which it covered of a dark-brown colour, that often continues for a long time after the patient is well. While this takes place, the ſwelling of the face and other parts gradually ſubſides.

But the foregoing proceſs does not go on at the ſame time

on every part of the body. The puſtules in thoſe places on which they firſt appear firſt arrive at maturation. They generally remain longeſt on the hands. The ſooner the puſtules become dry and fall off, the better in general is the prognoſis.

It often happens in caſes where the puſtules have been more numerous on the face, continued for a longer time, and been filled with a matter leſs thick and benign than uſual, that after they fall off, the parts which they cover ſuffer deſquamation, ſo that ſmall pits are formed, for the puſtules do not on falling off leave pits; they are formed by a ſucceeding operation.

It ſometimes happens that the matter of the puſtules, particularly on the arms and hands, is either abſorbed, or, as Dr. Walker alledges, tranſudes through the cuticle, ſo that they appear empty veſicles, giving riſe to the variety termed ſiliquoſa. Dr. Lobb * obſerves, that he has ſeen theſe empty veſicles fill with a well-conditioned matter, which is a favourable ſymptom It is not uncommon indeed, when the ſtrength is conſiderably reduced, for the puſtules on every part of the body to appear rather flat; the tumor of their baſe ſubſides, and the matter ſeems in part either to have tranſuded or been abſorbed;† and on the exhibition of any remedy which renews the ſtrength, walking for inſtance in a cool air, or in certain circumſtances uſing the cold bath, the puſtules again ſwell and become turgid with matter.

On the coming out of the puſtules, the fever ſuffers a remiſſion, and in the mildeſt caſes diſappears entirely about the fifth day, at which time the eruption is compleated.‡ About

* See his Practice of Phyſic.

† Dr. Walker's Treatise on the Small-Pox.

‡ When the tendency to sweating has occurred, it has been observed, notwithstanding the abatement of the fever, to continue nearly to the time of maturation.

the ſixth or ſeventh day, when the puſtules are numerous, ſome uneaſineſs of the throat comes on, with an increaſed ſecretion of ſaliva, the voice at the ſame time often becoming hoarſe. A conſiderable degree of any of theſe ſymptoms tends to afford an unfavourable prognoſis.

As the diſeaſe proceeds, the ſecretion from the mouth and throat often becomes thick, and is not eaſily ſpit out, ſometimes ocaſioning ſuch difficulty of ſwallowing, that liquids taken into the mouth are ſpit out again, or rejected by the noſe. The ſwelling or parched ſtate of the fauces alſo ſometimes conſiderably affects the breathing, and the puſtulary affection of the meatus auditorius externus, now and then occaſions deafneſs. Theſe ſymptoms, however, in the diſtinct ſmall-pox, are generally of little conſequence; and diſappear with thoſe which are more eſſential.

When the puſtules are numerous, a return of fever usually happens about the eleventh day, a period we ſhall find much dreaded in ſome forms of the diſeaſe; but in the diſtinct ſmall-pox, it is for the moſt part ſlight, and diſappears in a few days.

In the more ſevere caſes even of this form of the diſeaſe, a train of ſymptoms indicating more danger now and then ſupervenes at an earlier period, about the ſeventh or eighth day, and has been called the ſecondary fever.

After the pulſe has returned to its natural frequency, and the danger ſeems paſt, ſymptoms of fever, more or leſs gradually, in ſome caſes very ſuddenly, return; and in the ſpace of a few hours the pulſe becomes more frequent, and the other febrile ſymptoms more ſevere than at any former period.

The ſecondary fever is attended with leſs danger in the diſtinct ſmall-pox, than in the confluent. In the former it ſeldom appears when the puſtules are of a benign kind, and al-

moſt never when the patient has received the diſeaſe by inoculation, and been properly treated.

When the puſtules are numerous, they muſt, in many places, run together. When the greater number run together, the diſeaſe is termed the Confluent Small-pox. The ſymptoms peculiar to this form of it we are now to conſider.

2. Of the Symptoms of the Confluent Small-pox.

Although there is much ſimilarity in the eruptive fever of the diſtinct and confluent ſmall-pox, yet, even from the commencement, in ſome reſpects they differ eſſentially. The ſymptoms common to both, the ſenſation of cold, the anxiety, ſickneſs, vomiting, &c. more uniformly attend, and are experienced to a greater degree, in the confluent than in the diſtinct form of the diſeaſe.

The pains of the back and limbs in particular, which are only ſometimes troubleſome in the diſtinct ſmall-pox, very generally precede the confluent eruption.

The moſt ſtriking difference, however, between the eruptive fever of the diſtinct and confluent forms of the diſeaſe, is, that in the diſtinct it is ſynocha, never ſhewing a tendency to typhus, while in the confluent, although at the beginning ſynocha, it generally ſoon ſhews this tendency. In the moſt alarming caſes indeed the fever is a typhus almoſt from the firſt; petechiæ, and ſometimes hemorrhagies of a bad kind, appearing at a very early period.

Epileptic fits often occur during the firſt days, and have even proved fatal before the eruption appeared; at other times they continued to recur after the eruption is out, and ſometimes through the whole courſe of the diſeaſe.

The tendency to ſweat is uncommon in this form of ſmall-

pox; but a diarrhœa often precedes the eruption, and continues for a day or two after its appearance, which Sydenham declares he never saw happen in the distinct small-pox. If the stools are unusually fetid, the prognosis is bad.

This diarrhœa is generally confined to children; in adults an affection of the fauces, often amounting to a salivation, attends in its stead.* It was observed, that at a later period, even of the distinct small-pox, there is sometimes an increased secretion of thin saliva.

The eruption in the confluent, generally appears earlier than in the distinct small-pox; seldom later than about the beginning of the third day, and often on the second; in some cases even before the expiration of the first twenty-four hours; and fresh pustules continue to come out for the space of three or four days. The time of its appearance, however, is more uncertain than in the distinct small-pox It is sometimes delayed by inflammatory symptoms supervening, to the fourth or even to the fifth day. An acute pain of the loins resembling a fit of the gravel, in the side like that of pleurisy, in the limbs resembling rheumatism, or in the stomach accompanied with sickness and vomiting, are enumerated by Sydenham as symptoms which retard its appearance.

On the second day of the fever an erythematic inflammation often appears on the face, and soon spreads over the neck and breast, and in some cases over the whole body. This is the forerunner of the pustules, which begin to emerge from it in the form of small red points, many of which soon coalesce. They sometimes appear in clusters, the interme-

* The salivation sometimes, though rarely, appears in children. Tissot says, he has seen several scarcely four years of age, seized with salivation, while the bowels remained costive. See Tissot's Treatise on the Small-pox, Apoplexy, and Dropsy.

diate ſpaces being free from them; at other times many parts, and particularly the face, ſeem almoſt covered with them. On their firſt appearance they ſometimes ſo much reſemble the meaſles, that they can only be diſtinguiſhed by the accompanying ſymptoms.

Matter is formed ſooner in the confluent than in the diſtinct ſmall-pox. The puſtules are not much raiſed above the ſurrounding parts, nor do they retain the circular form, but even in places where they are not confluent become of an irregular ſhape; nor are they ſurrounded with an inflamed margin, the ſpaces between the puſtules being pale and flaccid, and the puſtules themſelves, about the time of maturation, often appear like thin pellicles fixed upon the ſkin.* On the face, where they are generally moſt numerous and confluent, they often ſo run into each other, that almoſt the whole ſeems one large veſicle, the ſurface being perfectly ſmooth.

The matter becomes whitiſh, brown, or even black, but never thick and yellow, like that of the diſtinct ſmall-pox. The lighter coloured the matter, the better is the prognoſis. When it is black, the danger is very great. The ſame may be ſaid of thoſe caſes where extravaſated blood is mixed with the matter, giving it the appearance of a bloody ſanies.

It has ſometimes been ſo virulent as not only to deſtroy many of the ſoft, but alſo the bony, parts of the face. The palate, fauces, velum pendulum palati and uvula, even the noſe and cheek-bones have been wholly deſtroyed by it, and the jaws ſo much affected, that the teeth have fallen from their ſockets. †

* This flat appearance of the pustules has been termed Sessile. By some writers the confluent small-pox is termed Variola Sessilis.

† See Burserius's Institut. Med. Pract. and other works on this disease.

The ſwelling of the face, which only ſometimes occurs in the diſtinct ſmall-pox, is a conſtant ſymptom of the confluent; and in this form of the diſeaſe it both appears earlier and riſes to a greater height.

About the ninth day of the eruption, that is, the eleventh of the diſeaſe, the puſtules begin to pour out their matter, which hardens on the ſurface, forming cruſts of a brown or black colour, that do not fall off for many days; and are almoſt always on the face followed by a deſquamation which leaves pits. The more numerous and confluent the puſtules are, and the darker their colour, the longer they are in diſappearing; and the deſquamation is ſometimes protracted beyond the twentieth day.

It often happens, that although the puſtules are crowded on the face, they are few, and even diſtinct, on every other part. But while the face is loaded with thoſe of the confluent kind, they never on other parts have a benign appearance; they are never circular, raiſed, nor filled with a well conditioned matter, but in this reſpect reſemble thoſe on the face. In the confluent ſmall-pox, however, the puſtules on the trunk and extremities are generally rather larger, and more prominent, than thoſe on the face.

Although the fever often abates on the appearance of the eruption, it never wholly ceaſes. This remiſſion generally continues till about the ſixth or ſeventh day, that is, till near the time of maturation, when it ſuffers a remarkable exacerbation, the commencement of the ſecondary fever, which often appears with more alarming ſymptoms than any that preceded it. If coma does not ſupervene, the patient is diſtreſſed with head-ach and obſtinate watchfulneſs, often the forerunners of delirium. The inflammatory affection of the fauces, with hoarſeneſs and dyſpnœa, increaſes; in many caſes all the worſt ſymptoms of typhus

ſupervene, and the patient is carried off on the eleventh day from the commencement of the diſeaſe, including that on which it made its attack. This day the reader will find frequently mentioned by Sydenham, and other writers, as the moſt fatal in ſmall-pox.

Such are the appearances of the regular diſtinct and confluent ſmall-pox. It will be neceſſary to notice ſome of the anomalous forms of this diſeaſe.

3. Of the Symptoms of Anomalous Small-pox.

It will be ſufficient to point out the circumſtances in which ſome of the moſt remarkable forms of anomalous, differ from the regular diſtinct and confluent, ſmall-pox.

One of the moſt common is that termed cryſtalline from the appearance of the puſtules.

Dr. Rogers * divides the cryſtalline ſmall-pox in the ſame way in which the regular has been divided, into diſtinct, contiguous, and confluent. But here there is not the ſame room for ſuch a diviſion; for although in ſome inſtances the puſtules are fewer and more diſtinct than in others, yet the ſtate of the matter, as well as the appearance of the puſtules themſelves, does not vary much in different caſes; and in all, the danger is conſiderable.

The cryſtalline ſmall-pox makes its attack, like other forms of the diſeaſe, with the common ſymptoms of fever.

The vomiting, pain at the pit of the ſtomach increaſed on preſſure, and coldneſs of the feet and hands, are ſtill the diagnoſtic ſymptoms of the eruptive fever.

It is more apt than the regular ſmall-pox to be attended with thoſe ſymptoms which indicate danger, coma, delirium,

* Dr. Rogers's Eſſay on Epidemic Diſeaſes.

proſtration of ſtrength, petechiæ, hemorrhagies, &c. the typhus more frequently ſhewing itſelf at an early period.

The eruption on its firſt appearance frequently looks well, and even continues to do ſo for a day or two. The puſtules are of a good colour and diſtinct, producing a conſiderable remiſſion of the febrile ſymptoms. About the third day of the eruption, however, there generally appears a numerous crop of puſtules; which, although often diſtinct, are of an irregular ſhape.

After the eruption is finiſhed, a conſiderable remiſſion of the fever takes place, but never complete apyrexia; and the urine generally remains limpid throughout the diſeaſe. The diſtinguiſhing ſymptom is the appearance of the matter, which is a colourleſs fluid that rarely acquires any degree of the purulent appearance.

As in the regular ſmall-pox, there are now and then interſperſed among the puſtules ſome which are empty, or clear and denſe having no cavity.

Whatever be the appearance of the puſtules on their firſt coming out, they ſoon become pale. They are never indeed ſurrounded with the well-defined florid margin, and the interſtices have the flaccid appearance obſerved in the confluent ſmall-pox.

The period at which the face and head ſwell is more uncertain than in the regular ſmall-pox, and the ſwelling in a day or two after its appearance is often ſuddenly tranſlated to the hands or feet; and then it has been obſerved that no ſalivation takes place.

If the eruptive fever runs high, it is frequently followed by a confluent eruption, and the danger which is at all times conſiderable is now very great, the fever in general ſoon becoming a malignant typhus.

In the worſt caſes, the face and head either do not ſwell at

all, or only in a ſlight degree, but inſtead of the ſwelling, inflammation often appears about the eye-lids, lips, throat,* or ſome neighbouring part; ſometimes the inflammation ſeizes on the encephalon, occaſioning violent head-ach and delirium; and traces of inflammation of the brain and its membranes are apparent after death. Even abſceſſes form in different parts of the head, and matter is ſometimes diſcharged by the ears.† The ſtrong pulſe at the temples, while that at the wriſt is feeble, mentioned among the ſymptoms of ſynochus as denoting a tendency to phrenitis, is a frequent ſymptom in the cryſtalline ſmall-pox, and there affords the ſame inference.

This form of ſmall-pox ſometimes proves ſuddenly fatal before the eruption appears; more frequently, however, death is delayed to the ſeventh day; ſometimes to the fourteenth, ſeventeenth, or even longer.‡

A remarkable form of the anomalous ſmall-pox is that which it ſometimes aſſumes when influenced by the meaſles appearing at the ſame time, illuſtrating an obſervation made in ſpeaking of contagion, that while a contagious diſeaſe rages other diſeaſes partake of its nature.

We have an inſtance of this form of ſmall-pox in the epidemic deſcribed by Sydenham, which raged in London in 1670, 1671, and 1672. It continued after the meaſles had ceaſed,

* Dr. Cleghorn's account of the Diseases of Minorca, and other works on the Anomalous Forms of Small-pox.

† In the irregular forms of small-pox it is not uncommon for abscesses to form in other parts of the body, and recovery seems often to depend on the pus being properly discharged. See the observations of Rossen, in Haller's Disp. ad Hist. et Cur. Morb. Pert.

‡ Dr. Walker's Treatise on the Small-pox.

gradually becoming milder and more regular till the year 1674, when the meafles again became epidemic, and the fmall-pox as irregular and fatal as before.*

The prevalence of meafles, however, does not always either increafe its fatality, or render it irregular.†

It is alfo very remarkable, that if, while a patient labours under the fmall-pox, he is feized with the meafles, the courfe of the former is interrupted till the eruption of meafles is finifhed.‡ In the third volume of the Medical Commentaries, however, cafes are related by Dr. Rainey, in which a concurrence of the fmall-pox and meafles took place without the progrefs of the former being interrupted.§ Analogous to the foregoing fact, is one mentioned by Dr. Heberden, in Dr. Kirkpatrick's Analyfis of Inoculation, that when the fmall-pox appeared during an epidemic intermittent, if any labouring under the fever were feized with it, the former ceafed till the fmall-pox had run its ufual courfe, and then went on as before; and another by Dr. Jenner, in the Continuation of his Obfervations relating to the Cow-pox, that the fcarlatina was interrupted by the appearance of this difeafe.

There is ftill another form of the fmall-pox which may certainly be regarded as anomalous, and deferves to be mentioned. It is met with only in children, and feems to be merely the

* Sydenhami Opera, sect. iii. chap. 6. De Variol. Anomal.

† See the 134th and following pages of Dr. Sim's Treatise on Epidemic Disorders.

‡ See the first volume of Dr. Duncan's Medical Commentaries, &c.

§ Cases of this kind I have known. Several are related in the Medical and Physical Journal. Vogel mentions from Pechlinus a case in which it is said small-pox appeared on one side of the body, and measles at the same time on the other.

regular confluent ſmall-pox conſiderally modified by peculiarity of conſtitution, thoſe only of a debilitated habit being ſubject to it.

The patient is attacked with langour and oppreſſion, that continue for ſome days without conſiderably affecting the pulſe, which is ſeldom much more frequent than in health, and the temperature is not above the healthy degree, ſometimes below it. As the ſymptoms advance, the patient loſes his appetite, is troubled with nauſea and inſatiable thirſt, becomes drowſy and often comatoſe. On the third day a few puſtules generally come out, but they ſoon diſappear, and the coma increaſing, the patient expires in a few days.

There is a ſet of ſymptoms, or rather certain modifications of ſome of the ſymptoms which have been enumerated, which deſerve the name of anomalous, yet do not conſtitute a diſtinct form of the diſeaſe. They are apt to occur when its courſe is diſturbed by improper treatment, or other cauſes. Obſtinate and profuſe ſweating, diarrhœa, and ſalivation, ſuppreſſion of urine, &c. As it will be neceſſary to conſider the means to be adopted when ſuch ſymptoms appear, to ſave repetition, I ſhall defer any further obſervations on them till we come to this part of the ſubject.

After the exſiccation of the puſtules, a new crop ſometimes comes out; and, on the other hand, the fever, with all its peculiar ſymptoms, ſometimes appears without any eruption at all.* It is aſſerted by Frank, Burſerius, and others, that in the latter caſe the patient is as ſecure againſt a ſecond attack, as if the eruption had made its appearance. There are ſome obſervations, however, in oppoſition to this opinion.

* See Sydenham's chapter entitled, Variolæ Regulares, p. 140.

In the fourth volume of the Memoirs of the Medical Society of London, Mr. Kite relates two cases in which inoculation produced the usual suppuration in the part inoculated, and at the usual time the patient sickened, but no variolous eruption followed. Both patients were again inoculated fourteen days after the first inoculation. One of them had the disease in the usual way and in a mild form; the other remained unaffected.

The small-pox, especially when confluent or irregular, is apt to leave behind it a variety of troublesome consequences. Most of those who survived the irregular small-pox of Minorca, Dr. Cleghorn informs us, remained blind, consumptive, or lame with caries of the bones, ulcers, &c. Sometimes a gangrenous erysipelas of the limbs, or apoplexy, has supervened and proved fatal. The blindness from a pustulary affection of the cornea is not uncommon, more rarely the hearing is destroyed, and the voice is sometimes lost. The palpebræ, the sides of the nares, and even those of the throat,† have grown together.

All kinds of small-pox leave behind them a predisposition to inflammatory diseases, particularly to rheumatism, ophthalmia, and visceral inflammations. On this part of the subject the reader may consult the 582nd and following pages of the fifth volume of Haller's Disput. ad Hist. et Cur. Morb. Pertinentes, and the third vol. of Frank's Epitome de Curand. Hom. Morb.

† See Vogel De Cog. et Curand. Morb. and others.

SECT. II.

Of the Morbid Appearances on Diſſection.

In thoſe who have died under a load of puſtules, the nares and inſide of the cheeks are often found covered with them, and the teeth are beſmeared with a thick viſcid ſaliva. Puſtules are frequently obſerved on the upper, very rarely on the under, part of the tongue, which is better moiſtened with ſaliva; the palate is often covered with them; they alſo frequently occupy the more external, very rarely the internal, parts of the meatus auditorius.

The maxillary, frontal, and other ſinuſes of the face are free from any morbid appearance. The cellular ſubſtance of the face, as well as of other parts of the body, eſpecially where the ſwelling is moſt conſiderable, is often diſtended with a ſerous fluid as in anaſarca.

On removing the cranium the dura mater appears perfectly ſound, but the veſſels of the brain are more turgid and filled with a darker coloured blood than uſual, and a greater quantity of ſerous fluid is found, particularly towards the baſe of the brain, "Circa infundibulum, integra illa arachnoideæ va-" gina quæ nervos tertii paris, adſitaſque partes concludit, " ſaccum aqua plenum referebat."* In other reſpects the brain is generally ſound.

* See Cottunnius de Sede Variolarum, p. 22.

On examining the parts ſituated in the neck, the œſophagus is found free from puſtules, even where the pharynx is loaded with them; or if any be obſerved in it, they are towards the upper part. The ſtate of the larynx and trachea is often very different. Theſe with the bronchiæ as far as their third diviſion are ſometimes more or leſs affected with puſtules, from which, and the ſtate of the nares, we readily account for the dyſpnœa and cough that frequently attend this diſeaſe. It ſometimes happens, however, even in the worſt forms of it, that the wind-pipe is wholly free from puſtules. Tiſſot ſays he has diſſected ſome ſo covered with them externally that there was ſcarcely room for one more, without finding any in the larynx or trachea. The trachea is ſometimes covered with a whitiſh cruſt which is eaſily ſeparated, and the ſecretion from the bronchiæ is now and then tinged with blood.

The fluid of the pericardium is alſo ſometimes tinged with blood, and ſmall particles like coagulated blood broken down, now and then appear ſtoating in it. The ſurface of the heart has been found rougher than uſual, and polipi are ſometimes found in its cavities. It is doubtful if any of theſe appearances be eſſentially connected with the diſeaſe. With reſpect to the laſt, it is a common appearance after death.* The lungs are often of a darker colour, and their moiſture is more copious than uſual. When no inflammatory affection has ſupervened, they are in other reſpects ſound. The form of the thorax has been obſerved conſiderably altered by enlargement of ſome of the abdominal viſcera; this ſeems to be merely accidental.

The various parts, as the mouth, pharynx, larynx, trachea, &c. which are ſometimes covered with puſtules, are now and then in the worſt caſes affected with gangrene.

* See Dr. Baillies's obſervations on this ſubject, in his Treatise on Morbid Anatomy.

There are but few morbid appearances in the abdomen. In the ſtomach there is ſometimes found a thick whitish matter, which alſo frequently beſmears the œſophagus, but mucus frequently aſſumes this appearance when it has lain for ſome time in theſe cavities. In examining bodies, we often of courſe meet with morbid appearances, which cannot be regarded as connected with the diſeaſe of which the patient died, as they are not obſerved in perhaps one of 50 caſes. Thus in the preſent inſtance, the liver is ſometimes enlarged, ſometimes ſoft, at other times hard and gritty, now and then hydatids are found in it. The ſtate of the bowels alſo varies; worms, for example, or traces of inflammation, are ſometimes found in the ſtomach and inteſtines.

What principally demands our attention in the abdomen is, that puſtules are never found on any of its viſcera. Some have aſſerted the contrary, but it appears probable from the obſervations of Cottunnius that they had miſtaken ſmall lymphatic glands for puſtules. He diſſected forty bodies in the preſence of ſeveral people, without obſerving any puſtules on the ſtomach or inteſtines. Did they ſpread along the alimentary canal indeed, there would neceſſarily be a train of ſymptoms, never obſerved in this diseaſe.

It appears then that variolous puſtules only attack thoſe cavities of the body, to which the air has free acceſs; as the noſe, mouth, trachea, the larger branches of the bronchiæ, and the outermoſt part of the meatus auditorius. It has alſo been obſerved in caſes of prolapſus ani, that puſtules frequently attack that part of the gut which is expoſed to the air.

Cottunnius alledges as the cauſe of this, that moiſture prevents their appearance; and in confirmation of his opinion, obſerves, that if the eye-lids be kept moiſt by wet bread from the firſt attack of the diſeaſe, puſtules never appear upon them; and by the same means, he thinks puſtules may be prevented

in other parts. This opinion, however, is invalidated by the fætus in utero being ſubject to the variolous eruption.

The ſeat of the puſtules is neither the true ſkin nor the cuticle, but the mucus which lies between them. The author juſt mentioned made frequent diſſections in order to determine this point. "Quoties puſtulam incipientem diſſecui, vidi cu-" ticulam elevatam ad puſtulæ formam, cutis corpore intacto, " et tumoris immuni."* The ſeat of the puſtules, a queſtion at one time much agitated, is thus very accurately aſcertained; but this knowledge has not hitherto improved the treatment of the diſeaſe.

SECT. III.

Of the Cauſes of the Small-Pox.

THIS diseaſe has only made its appearance in Europe in modern times. There is no mention of it in the writings of the Greek or Roman phyſicians; and we are unable to determine how long it has been known in other parts of the world, or where it firſt made its appearance.

The Arabian writers are the earlieſt we are acquainted with, who mention it. Both Rhazes and Avicenna treat of it. Of theſe, Rhazes is the oldeſt. The oldeſt writer on the ſmall-pox whom he mentions [Ahron] reſided at Alexandria, when it was beſieged by the Saracens in 640 of the Chriſtian æra. There is no diſtinct mention of the ſmall-pox earlier than this.

* Cottunnius de Sede Var. p. 202.

The moſt prevalent opinion is, that it firſt appeared in the eaſtern parts of Aſia, having been known in many of theſe, particularly in China, from very early times. Many circumſtances, however, tend to contradict this opinion. There is reaſon to believe that it raged among the Abyſſinians, when they beſieged Mecca in the year 569;* from whence it was probably introduced into Egypt by the Saracens, ſpread with them along the northern parts of Africa, and accompanied them when they came to Europe.†

The opinion that the ſmall-pox was firſt brought into Europe by the cruſaders is unfounded, as Dr. Woodville has met with it, under the name Variolæ, in manuſcripts of the Harlean and Cottonian Collections in the Britiſh Muſeum, which bear evidence of having been written before the year 900. There can be little doubt, however, that by means of the cruſaders the ſmall-pox was more generally diſſeminated.‡ It is mentioned by Britiſh writers as early as the 13th century, but at what time it was introduced into this iſland is not aſcertained. In America it was unknown till carried thither by Europeans.

This imperfect hiſtory of the ſmall-pox, although there were no other facts on the ſubject, is ſufficient to prove, that it ariſes from a peculiar contagion.

The fatality of the ſmall-pox ſoon led to the employment of various means to obviate its effects. It is computed that one of ſix, who receive the ſmall-pox in the natural way, dies; and that about the eighth part, and in ſome places many more, of the people of a country where the caſual ſmall-pox is pre-

* See Dr. Woodville's History of Inoculation.

† See Friend's History of Medicine from the days of Galen to the beginning of the 16th century.

‡ In some of the northern parts of Europe, which have little intercourse with the rest, the small-pox was not known, it is said, before the beginning of the last century.

valent, fall a ſacrifice to this diſeaſe.* Of theſe means by far the moſt ſucceſsful, if we except the introduction of the cow-pox, of which I ſhall preſently have occaſion to ſpeak, is inoculation. In the former editions of this work I treated of it at conſiderable length. But as there is now reaſon to hope, that inoculation for cow-pox will ſoon wholly ſupercede that for ſmall-pox, I ſhall not enter on the latter here.†

The circumſtance which has chiefly prevented the ſalutary effects of inoculation is, that the inoculated, like the caſual ſmall-pox, being contagious, both are generally introduced at the ſame time. This circumſtance baniſhes all hopes of

* "The celebrated M. De La Condamine computes, that in France "one in ten of all who are born dies of the small-pox. Dr. Rosen-"stein, who wrote an excellent Treatise on the Diseases of Children, "shews, that every tenth boy and every ninth girl dies of it in Swe-"den, according to the accurate reports of the commissioners ap-"pointed to make the inquiry. In London, the births were to the "deaths by the small-pox, as six and a fourth to one; in Manchester, "as six and a half to one; in Liverpool, as five and a half to one; in "Chester, as six and two-thirds to one." See the Introduction to Dr. Haygarth's Sketch of a Plan to exterminate the casual Small-pox, &c. At certain times the small-pox proves much more fatal. Of thirty-seven ill of the worst kind of small-pox, attended by Baron Dimsdale in Russia, thirty-five died.

† Those who wish for a knowledge of it, may consult some of the following works:—Dr. Alex. Monro, sen. on the Inoculation of the Small pox, in Scotland, Dr. Thomas Dimsdale on Inoculation, 8vo. Lond. 1781, Dr. J. Kirkpatrick's Analysis of Inoculation of the Small-pox, 8vo. Lond. 1761, Mr. Chandler's Treatise on Inoculation, Camper Sur les Avantages de l'inoculation et la meilleure methode de l'administrer, Sir George Baker's Treatise on the Inoculation of the Small-pox, 8vo. Lond. 1766, Mr. Burgess's Account of the Preparation and Management necessary to Inoculation, Dr. Gale's Dissertation on the Inoculation of Small-pox, in America, Dr. Andrews's Practice

preventing the caſual ſmall-pox by inoculating for this diſeaſe. But the labours of Dr. Jenner, which will for ever place him in the firſt rank of the benefactors of mankind, have ſupplied us with the means not only of preventing the caſual ſmall-pox, but of wholly extirpating the diſeaſe. It is painful to think how much they have been counteracted in this country.

The Cow-pox has been long known in ſome parts of England, and even known as a preventive againſt the ſmall-pox, but Dr. Jenner firſt called the attention of the public to it, in a treatiſe entitled, " An Inquiry into the Cauſes and Effects " of the Variolæ Vaccinæ, &c." and by a ſeries of accurate and laborious experiments, proved its efficacy.

Cows are ſubject to an affection of the teats, which appears in irregular puſtules, ſurrounded by an eryſipelatous inflammation. Theſe, if neglected, often degenerate into troubleſome eating ſores, the animals ſeem indiſpoſed, and the ſecretion of milk is leſſened.

Inflamed ſpots often appear on the hands and wriſts of thoſe employed in milking ſuch cows, at firſt aſſuming the appearance of ſmall veſications, ſimilar to thoſe produced by ſcalds. They quickly, however, run to ſuppuration, the edges of the ſuppurating parts, which are generally circular, being raiſed. Tumors appear in the axillæ, and in many caſes all the uſual ſymptoms of fever with more or leſs ſeverity ſupervene, occaſionally attended with pains in the limbs, and loins, vomiting, head-ach, and even, though very rarely, with delirium.

Theſe ſymptoms continue from one to three or four days,

of Inoculation, Impartially Considered, Mr. J. Mudge on the Inoculation of the Small-pox, 12mo. Lond. 1777. In most of the works on small-pox which I have had occasion to mention, the reader will find an account of inoculation.

and troublefome fores are fometimes left on the hands. The lips, noftrils, eye-lids, &c. are alfo now and then affected with ulceration, but this feems to proceed from the patient touching thofe parts with the hands, for when eruptions appear in the cow-pox, at a diftance from the inoculated part, they are not apt to degenerate into fores.

As the cow-pox certainly does not belong to the exanthemata, nor indeed I may fay to febrile difeafes, for fever is not effential to it, nor even to its preventive effect with refpect to the fmall-pox,* I fhall not enter upon any account of it here; but refer the reader to the works of Dr. Jenner, Dr. Willan, and others, and only make a few obfervations on its fafety and efficacy as a preventive againft fmall-pox.

The cow-pox appears to be almoft if not quite as good a preventive againft the fmall-pox as this difeafe itfelf is; for it is to be remembered that there is no abfolute preventive againft the fmall-pox; there are many inftances of its having occured two or more times in the fame perfon.†

Of the proofs of the efficacy of cow-pox as a preventive againft fmall-pox, I hope it is now unneceffary to fay much, and if it were neceffary, the following quotation from the report of the College of Phyficians of London would be

* "Vaccination," Dr. Jenner obfervES "gives complete security to "the conftitution when no indifpofition has been perceptible through-"out the whole progress of the pustules on the arm." See a letter to "Dr. Willan, in his Treatise on the Cow-pox.

† Many instances of this, were it not that the fact is now generally admitted, might be adduced. I have myself seen the small-pox attack the same person a second time. In the second attack it appeared in the confluent form. I knew an instance of a person so deeply seamed with the small-pox that he received a nick-name from it, who, notwithstanding had a second attack of the disease. For similar

ſufficient. "The ſecurity derived from vaccination, if not "abſolutely perfect, is as nearly ſo as can perhaps be expected "from any human diſcovery; for, amongſt ſeveral hundred "thouſand caſes, with the reſults of which the college have "been made acquainted, the number of alleged failures have "been ſurprizingly ſmall; ſo much ſo as to form, certainly, "no reaſonable objection to the general adoption of vaccina-"tion; for it appears, *that there are not nearly ſo many failures "in a given number of vaccinated perſons, as there are deaths in "an equal number of perſons inoculated for the ſmall-pox.*"

It has been alleged that the preventive power of the cow-pox continues only for a limited time. But a ſufficient number of inſtances have now been adduced by Dr. Jenner, and others, to prove the fallacy of this opinion. Caſes have been authenticated in which the contagion of ſmall pox was reſiſted by thoſe who had been caſually affected with cow-pox, forty, fifty, and even ſixty * years before.

But the prejudice which has moſt retarded the progreſs of vaccination in this country is the opinion that it injures the conſtitution, and gives riſe to other diſeaſes † We cannot have a more ſatisfactory refutation of this prejudice than by

instances the reader may consult the Inst. Med. Pract. of Burserius, the Collect. Soc. Hafn. vol. 2. Haller's Disp. ad Hist. et cur. Morb. pert. vol. 5. Papers by Mr. Kite, and Mr. Withers, in the Memoirs of the Med. Soc. of London, vol. 4. &c. In Dr. Jenner's continuation of facts relative to the Var. Vac. Dr. Mills, who had the small-pox a second time from inoculation, relates his own case.

* See the report of the Medical Faculty of Kiel, upon the Cow-pox, in the Duchies of Schleswig and Holstein.

† Fatal cases have occurred so very rarely, that we are inclined to doubt whether in these, death was wholly to be ascribed to this disease. See Dr Woodville's Reports of a series of Inoculation for the Variolæ Vaccinæ.

again recurring to the report of the College of Phyſicians. "The teſtimonies before the College of Phyſicians are very "decided in declaring, that vaccination does leſs miſchief to "the conſtitution, and leſs frequently gives riſe to other diſ-"eaſes than the ſmall-pox, either natural or inoculated. The "College feel themſelves called upon to ſtate this ſtrongly, "becauſe it has been objected to vaccination, that it produces "new, unheard of, and monſtrous diſeaſes. Of ſuch aſſer-"tions no proofs have been produced; and after diligent en-"quiry, the College believe them to have been the inventions "of deſigning, or the miſtakes of ignorant, men."

No man of common feeling can contemplate without emotion, the effects already produced by vaccination; whole nations protected from a peſtilence which has for ages been their greateſt ſcourge. In what terms ſhall we ſpeak of thoſe, if there be any, who would knowingly deprive mankind of ſuch a bleſſing, and in what terms expreſs our acknowledgements to that individual, to whoſe exertions we owe it? exertions which will ſave more of his ſpecies, than all the calamities of his age, great as they are, can deſtroy.

SECT. IV.

Of the Treatment of Small-pox.

I SHALL not, for reaſons I have already mentioned, conſider the treatment of ſmall-pox at the ſame length as in the former editions of this Treatiſe. For the ſake of perſpicuity I ſhall divide it into that of the Diſtinct and that of the Confluent forms of the diſeaſe; or rather, I ſhall in the firſt place

confider the mode of treatment in the former, and afterwards point out the circumflances in which the treatment of the Confluent differs from that of the Diftinct. And farther, to avoid confufion, I fhall refer the reader to the end of this fection, for the means to be employed when thofe fymptoms which have been termed anomalous appear, which will prevent interruption in laying down the general plan of cure.

1. Of the treatment of the Diftinct Small-pox.

It was foon obferved that the appearance of the eruption in fmall-pox generally brings relief, and from this circumftance very unwarrantable inferences were drawn, which for a long time influenced the practice in this difeafe, and, it cannot be denied, greatly increafed its fatality.

Becaufe the eruption was generally attended with a remiffion of the fymptoms, it was inferred, that the more copious it was, the more relief it would bring. All means tending to promote it were therefore employed, and whatever tended to check it carefully avoided. By external warmth and ftimulating medicines, phyficians endeavoured to fupport the fever; while evacuations and every thing elfe tending to moderate excitement, were forbidden. A very extenfive experience has now contradicted thefe maxims. The mode of reafoning which led to them, the reader will perceive, is the fame as that which has been employed refpecting the critical fymptoms of fever, and the retroceffion of eruptions, which I have had occafion to confider at length. So far from the moft copious eruption bringing moft relief, the fymptoms are always mildeft when the eruption is moft fcanty; fo that inftead of fupporting the excitement, that the eruption may be copious; the indication in the eruptive fever, which in the diftinct fmall-pox is always a fynocha, is to moderate excitement, that it may be as fcanty as poffible.

All that was ſaid of this indication in ſpeaking of the treatment of ſynocha, is nearly applicable to the caſe before us. The chief difference is, that in the latter, the means for diminiſhing excitement ſhould be more powerful in proportion to the excitement. In common ſynocha, which is ſucceeded by typhus, a liberal uſe of antiphlogiſtic meaſures is ſeldom warrantable. In the eruptive fever of the diſtinct ſmall-pox, on the contrary, the ſynocha is not ſucceeded by typhus but terminated by the appearance of the eruption.

Here indeed, ſuch means are not only more ſafe but greater advantage is to be expected from them, the ſeverity of the enſuing diſeaſe being more generally proportioned to the degree of excitement which prevails in the beginning.

The very effects which we dread from evacuations in the common ſynocha, may be the conſequence of abſtaining from them in the eruptive fever of ſmall-pox; for wherever it runs high, the ſecondary fever is apt to ſupervene; and this, in ſpite of all we can do, often degenerates into a bad typhus.

It is not to be inferred, however, that the uſe of antiphlogiſtic meaſures, and particularly evacuations, cannot be too free. Excitement muſt never be unneceſſarily diminiſhed.

Such are the principles which regulate the treatment of the eruptive fever of the diſtinct ſmall-pox. Their application will be rendered eaſy by referring to what was ſaid of the treatment of ſymple ſynocha. I ſhall make a few obſervations on the moſt powerful remedies employed in this diſeaſe.

It is remarkable that Sydenham made little uſe of cathartics in the ſmall-pox, at preſent regarded as indiſpenſable; and very generally recommended veneſection, the propriety of which in ninty-nine caſes of one hundred is now called in queſtion.

It is an obſervation to which there are few exceptions, that blood-letting is only to be employed when the effects ex-

pected from it cannot be procured by other means. Of all remedies it may be considered the most dangerous. There is no disease which tends more directly to impair the powers of life; and in many cases it is often doubtful whether the disease, or the loss of blood which relieves it, is most to be dreaded.

It is true indeed, that in cases of unimpaired vigour, a moderate loss of blood is not attended with danger. But in the strongest its frequent repetition is always to be feared, and a prudent physician, as he cannot with absolute certainty foresee the course of any disease, and still less what new diseases may supervene, will reserve so powerful a remedy, lest symptoms should appear that may render it indispensable. It is one of the first maxims in the treatment of febrile diseases, to save the patient's strength as much as possible, that our practice may have sufficient latitude, if I may use the expression; when it is cramped by debility, the danger is always great.

We are to inquire then what advantage is to be expected from blood-letting here, which cannot be procured by less debilitating means. The question seems easily answered; if it be admitted, that diminution of excitement is the only effect to be expected from blood-letting in idiophatic fevers,* there can be no occasion for this remedy while cool air and mild cathartics, by which only the thinner and less important parts of the blood are evacuated, sufficiently diminish the excitement. When the increased excitement resists gentler means, as it is of the greatest consequence that it should be reduced at an early period, we must have recourse to it; and here the following remark of Sydenham is fully warranted by experience, "Vulgare illud atque tralatitium argumentum,

* See the observations on this subject in the Chapter on the Treatment of Continued Fever.

" quo adverſus phlebotomiam aliaſque evacuationes utuntur, " nempe quod non liceat a circumferentia ad centrum mo- " vere humores, cum natura in hoc morbo contrarium " adfectare videatur, nullarum plane virium eſt."

When blood-letting is improper before the eruption, it muſt be ſtill more ſo after it, when the fever either becomes milder or wholly diſappears. Even in the diſtinct ſmall-pox, indeed, the ſecondary fever ſometimes ſupervenes. At its commencement it is a ſynocha, and we muſt again have recourſe to blood-letting if the ſymptoms reſiſt other means; remembering, however, that now the fever will not be relieved by the appearance of an eruption, but will ſuddenly aſſume the form of typhus, if the antiphlogiſtic plan be carried too far.

Some authors, and thoſe of the higheſt authority, have recommended blood-letting, at the very termination of the diſeaſe, or rather after every ſymptom of it has diſappeared.* This practice is now very generally abandoned, unleſs ſymptoms demanding blood-letting ſupervene. It was not, however, the mere offspring of hypotheſis. The ſmall-pox, like ſome of the other exanthemata, we have ſeen, often leaves behind it a prediſpoſition to inflammatory diſeaſes; but it is ſufficient to have recourſe to blood-letting when the preſence of theſe renders it neceſſary. The reader may conſult what was ſaid above, concerning blood-letting during the apyrexia of intermittents, which is applicable to the caſe before us; in which indeed there is an additional argument for not letting blood till the ſymptoms requiring it ſhew themſelves, namely, that there is much leſs chance of their appearance, than of the recurrence of the paroxyſm of an intermittent.

* Sydenham de Variolis. Mead's Monita et Præcepta Medica cum Notis Wintringhami, &c.

Local blood-letting, by ſcarification of the temples, or leeches applied to them, is a valuable remedy where the coma or inflammation of the eyes is conſiderable.

Although I was only conſidering the treatment of the eruptive fever, when I had occaſion to mention blood-letting, it appeared a more diſtinct plan to collect in one place the remarks to be made on this remedy, than repeatedly to mention it in ſpeaking of the different ſtages of the diſeaſe.

Of all the means employed for moderating excitement in the eruptive fever, none has proved ſo generally beneficial as the application of cold. Sydenham * was the firſt who in this country introduced the cool regimen in ſmall-pox; one of his greateſt improvements. The injury done by a high temperature, and the advantage of a free admiſſion of cool air, in continued fever, have been pointed out. Both are ſtill more remarkable in ſmall-pox.

The advantage of the cool regimen in this diſeaſe has long been known in the Eaſt; it is only lately, however, that it has been introduced into Europe, for even the authority of Sydenham could not render it prevalent. It is now practiſed to a greater extent than he ventured to recommend.

The patient ſhould at no period be confined to the houſe, whatever be the ſeaſon, unleſs the fever be ſuch as confines him to bed. He ſhould lie with few bed-clothes, and on a mattreſs; his room ſhould be cool;† and a free uſe of cold drink and frequent changes of cold linen are equally grateful and ſalutary.

There can be no doubt, however, that the cool regimen, like every other practice, may be carried too far. Dr. Ma-

* See his chapters De Variol. Regular. An. 1667, 1668, 1669; and De Variol. Anomal. An. 1670, 1671, 1672.

† See what was ſaid of diminiſhing the temperature of the patient's bed-room, in the treatment of continued fever.

kittrick Adair,* in a letter to Dr. Duncan, makes ſome obſervations on the Suttonian plan of treatment; that is, the very low diet and free expoſure to cold; and alleges that it often does harm, eſpecially when carried ſo far as entirely to prevent the eruption. This, however, rarely happens, and although Dr. Adair's obſervations certainly demand attention, on comparing them with thoſe of other writers, as well as with what we every day ſee, it will appear, I think, that he endeavours too much to reſtrict the employment of the cool regimen.

Many have adviſed us to continue the exhibition of cathartics and the cool regimen in their full extent after the eruption is finiſhed, and even when the fever has almoſt or wholly diſappeared. But if our view in the employment of theſe means, is to moderate excitement, of what ſervice can they be when the excitement has returned to the healthy degree? and the truth is that when employed to any conſiderable extent they are then found to do harm. The oppoſite extremes of conſtipation and a heated atmoſphere, however, even at this period, are ſtill more prejudicial.†

If, on the other hand, the remiſſion is inconſiderable on the completion of the eruption, the uſe of cathartics and the cool regimen is as neceſſary as at earlier periods; and as they are the beſt means of moderating the eruptive fever, they are alſo the moſt effectual for preventing the appearance of the ſecondary; which is always to be feared under theſe circumſtances.

The uſe of the cold affuſion has been extended to the ſmall-pox, and it is ſaid with great ſucceſs. Its employment

* See the 8th volume of the Medical Commentaries.

† A very striking instance of the injury done by an unguarded relaxation of the cold regimen is related by Mr. Perkins, in the 3d vol. of the Medical Observations and Inquiries.

in this diſeaſe is regulated by the ſame rules as in continued fever. In the worſt forms of the diſeaſe in which the typhus ſhews itſelf at an early period, it is a doubtful remedy, as may be inferred from the obſervations of Dr. Currie, above quoted, In the ſecond volume of the laſt edition of his work, he relates two caſes of confluent ſmall-pox, in one of which the cold, and in the other, the tepid, affuſion were employed without ſucceſs.

The Indians, Dr. Ruſh informs us, plunge themſelves into cold water as ſoon as they perceive the eruption of ſmall-pox; which is found to moderate the diſeaſe. Cold bathing in the ſmall-pox has alſo been practiſed by Europeans in ſultry climates. A perſon who had ſpent many years in the Eaſt Indies, informed me, that when the puſtules have a flaccid unfavourable appearance, on the uſe of the cold bath they become in the ſpace of a few minutes both prominent and well filled.

Although the eruptive fever in the diſtinct ſmall-pox is always a ſynocha; if the fever has continued after the eruption, and eſpecially if the ſecondary fever has ſupervened, a greater or leſs degree of typhus always ſhews itſelf; and then the treatment is the ſame as in typhus from other cauſes.

2. Of the Treatment of Confluent Small-pox.

The more alarming the eruptive fever, the more aſſiduous muſt be our attention to every part of the cool regimen. On this head there is little to be added to what has already been ſaid.

It cannot be denied that an alarming train of ſymptoms has ſometimes been induced by ſudden and imprudent expoſure to cold. The eruption recedes, the patient falls into ſyncope * or convulſions which ſometimes terminate fatally;

* See the obſervations of Dr. Dimsdale, and others.

and it is in the confluent forms of the diſeaſe that this accident is moſt to be apprehended; and there, it appears from the obſervations of authors, chiefly at the time of maturation. It will be found, however, on reviewing the hiſtory of ſuch caſes, that previous to the expoſure to cold, the patient had generally been debilitated by the hot regimen, or other improper modes of practice. When the diſeaſe has been properly treated from the commencement, retroceſſion is very rare; and even where the hot regimen has been employed, unleſs the application of cold be very incautious, it is generally attended with the beſt effects.* The employment of the cool regimen, like that of the cold effuſion, muſt, of courſe, be regulated by the temperature of the patient, otherwiſe great miſchief may be done.

There is but one form of ſmall pox in which the good effects of the cool regimen have been called in queſtion. Dr. Rogers, of Cork, who had extenſive opportunities of treating the cryſtalline ſmall-pox, declares that he has not there found it produce its uſual good effects.

No part of the treatment of confluent ſmall-pox demands more attention than the employment of cathartics. Practitioners were firſt led to recommend catharſis in confluent ſmall-pox from obſerving that when a ſpontaneous diarrhœa occurred, eſpecially if it appeared early in the diſeaſe, the puſtules were leſs numerous, the fever more moderate, and the ſwelling of the head leſs conſiderable.†

The reader will find caſes to prove the benefit of purging in the confluent ſmall-pox in Dr. Walker's Treatiſe, and in that of Dr. Friend, entitled "De Purgantibus in Secunda Variola-

* See the obſervations of Sydenham, and Sir George Baker, in his Treatiſe on this diſeaſe.

† Dr. Cleghorn's Account of the Diſeaſes of Minorca.

" rum confluentium Febre adhibendis." " Vides ut aliis," Dr. Friend remarking on these cases, observes, " inopinatam " præsentissimamque opem attulerit purgatio; ut aliis pau- " lisper subvenerit cunctatius per vices repetita."*

Cathartics produce their good effects most slowly, and their frequent repetition consequently is most necessary where the excitement is greatest.

Upon the whole it appears, that they are useful at all periods of small-pox, and particularly during the eruptive fever, and at the time the secondary fever is expected, unless a diarrhœa has supervened; and that the more severe the disease, even although the symptoms of typhus have come on,† as I have myself witnessed, they are the more indispensable.

The use of cathartics in this disease has perhaps been carried too far by some practitioners, particularly in the secondary fever. If we find the patient's strength sinking, notwithstanding the use of cordials and tonic medicines, it is necessary to discontinue the cathartics, or employ only those of the gentlest kind.

It has long been a practice in eastern countries, and it is recommended by some late European writers, Tissot, Burserius, and others, to discharge the matter of the pustules by

* Dr. Friend even relates one case, in which the gangrenous blisters mentioned by Sydenham, and which he always found a fatal symptom, appeared; which treated with mild cathartics terminated favourably. There are some good observations on purging in small-pox by Dr. Simpson, Professor of Medicine at St. Andrew's. For this practice the reader may also consult the works of Hoffman, Huxham, Mead, and Wintringham.

† " If an apprehension," says Dr. Walker, " of weakening the " vital powers in this species of small-pox," viz. the putrid, " when " neither diarrhœa nor any other apparent evacuation occurs, except- " ing what is discharged by the salivary glands, induce us to suspend " purging altogether, or even delay it long, the prognosis in every " case of this sort, must be desperate."

piercing them with fine needles, which occaſions a copious ſecretion by the ſkin; for the puſtules ſoon fill again, and are again opened, which is always done by making a very ſmall aperture.* By this means it is thought the acceſſion of the ſecondary fever is often prevented.

There is certainly a ſtriking analogy between the prevention of the ſecondary fever in this way and by the uſe of cathartics; but how an increaſed ſecretion either by the ſkin or bowels acts in preventing it, it is impoſſible to ſay.

More harm may be done by incautious blood-letting in the confluent, than in the diſtinct ſmall-pox, and it is more difficult to determine when it ſhould be employed. In the former the eruptive fever is very often characteriſed by great excitement, accompanied with violent pains of the back, breaſt and head; ſo that an inexperienced practitioner would judge copious blood-letting neceſſary. Thoſe acquainted with the diſeaſe, however, will recollect, that theſe ſymptoms are the forerunners of a confluent eruption, and that ſymptoms of typhus will ſuddenly ſupervene if the excitement is too much reduced. The puſtules will aſſume a more unfavourable character, and the patient often ſink under that train of ſymptoms which has been termed putreſcent.†

With reſpect to the treatment after typhus has ſupervened, almoſt all that was ſaid of the treatment of this fever is applicable here.

The typhus may either, as in the worſt caſes, ſhew itſelf in the eruptive, or what is more common, ſooner or later in the ſecondary, fever. In the regular ſmall-pox, typhus never

* It has been considered as dangerous to admit air into their cavities.

† The reader will find these observations illustrated in a striking manner, in Dr. Cleghorn's Account of a Malignant Small-pox which raged in Minorca.

precedes a diſtinct eruption, nor is ſuch an eruption often followed by any conſiderable degree of this fever. In anomalous caſes, it often precedes, and more frequently follows a diſtinct eruption.

The earlier the typhus ſhews itſelf the tonic plan is the more indiſpenſable.

Morton was among the firſt practitioners who employed the bark in confluent ſmall-pox. Thoſe who ſucceeded him adopted the practice, but the late Dr. Alexander Monro was the firſt who gave it freely in this diſeaſe. It is now employed with the ſame freedom as in common typhus. By the uſe of the bark, Dr. Monro obſerves, empty veſicles were filled with matter; watery ſanies changed into white, thick pus; while petechiæ became paler, and at laſt diſappeared. Whatever reſtores vigour, changes at the ſame time the ſtate of the matter, from which in moſt caſes the prognoſis may with great certainty be collected.

In many caſes other aſtringents are employed with advantage. Alum mixed with Peruvian bark, Vogel * obſerves, is the beſt of all medicines when the puſtules are bloody. Dr. Wall † alſo inſiſts on the advantage of alum in ſuch caſes. The ſulphuric acid ‡ has been juſtly celebrated in all the worſt forms of this diſeaſe. Acids § of all kinds have been much employed. Dr. William Wright ‖ particularly recom-

* Prælect. Acad. &c.

† Philosophical Transactions, No. 484, §. 4.

‡ Dr. Brocklesby mentions an instance in which recovery seemed owing to the exhibition of large doses of this acid. The patient took no less than an ounce of the acid. vit. ten. daily.

§ I am induced by long and repeated experience, says Tissot, to regard mineral acids as the most valuable remedy we have in the small-pox.

‖ See Dr. Wright's Letter to Dr. Morgan.

mends a mixture of vegetable acids and common ſalt in this and all caſes called putrid.

I ſhall conſider the treatment of the anomalous ſymptoms the more at length, as the ſame obſervations apply to the other exanthemata when ſimilar ſymptoms appear in them.

Inflammation of the brain is a more frequent accident in the crayſtalline than in other forms of ſmall-pox. When the patient is attacked with an acute pain of the head, or delirium; when the eyes are inflamed, and incapable of bearing the light, the carotid and temporal arteries beating ſtrongly while the pulſe at the wriſt is ſmall and feeble, we have reaſon to fear inflammation of the brain, the treatment of which will be conſidered at length in the next volume. The chief difference in the treatment of idiopathic phrenitis, and that we are ſpeaking of, is, that we can ſeldom employ veneſection ſo freely in the latter, and muſt truſt more to local means.

Inflammation is alſo apt to ſeize on other viſcera, particularly the lungs, occaſioning much difficulty of breathing and cough; a ſimilar obſervation applies to the treatment in this caſe.

Dyſpnœa often ſupervenes in ſmall-pox from other cauſes, a puſtulary affection of the larynx, trachea, and larger branches of the bronchiæ, or an unuſual degree of ſwelling in the fauces, which alſo impedes deglutition. In theſe caſes, large bliſters applied as near the part affected as poſſible are the moſt ſucceſsful remedies. The same may be ſaid of difficulty of deglutition in conſequence of the viſcidity of the saliva, in which gargles, ſuch as thoſe recommended in the aphthæ infantum, ſhould at the ſame time be employed. Bang recommends a gargle of oxymel of ſquills and water, and the application of ſinapiſms to the hands and feet, with gentle laxatives; and if the difficulty of breathing be great, the antimonium tartariſatum. Dr. Brocklesby obſerves, that ſmall doſes of ipeca-

cuanha tend to reſtore the ſalivation when it is either ſuppreſſed or too viſcid, and to alleviate the dyſpnœa which often attends this accident. When the ſtate of the fever admits of vomiting, it is often the means of relieving the ſwelling of the fauces and promoting the ſecretion of ſaliva.* The dyſpnœa which comes on upon the ſudden interruption of the ſalivation, ſeems often to ariſe from a degree of pneumonia.

The ſalivation, on the other hand, is ſometimes ſo copious as to threaten ſuffocation from the fluid falling conſtantly into the trachea, eſpecially where there is any degree of coma. In this caſe Vogel thinks cathartics the moſt ſucceſsful remedy.

Profuſe diarrhœa is a troubleſome ſymptom in confluent ſmall-pox, particularly in children. Unleſs it ſhould produce a dangerous degree of debility, we muſt be cautious how we check it; and even when it does occaſion much debility, the ſafeſt plan is to endeavour to leſſen the diſcharge by tonic medicines. There is perhaps no inſtance, except towards the termination of the diſeaſe, in which the diarrhœa ſhould be ſtopped by opiates and aſtringents, unleſs it is ſo profuſe as to threaten danger, and then it is to be ſtopped very gradually; and when the medicines produce too ſudden an effect, they muſt be counteracted by gentle laxatives. The diarrhœa is ſometimes, though rarely, rendered profuſe by expoſure to cold; ſome relaxation in the cold regimen is then proper.

Obſtinate vomiting is a dangerous ſymptom, both by reducing the ſtrength, and preventing the exhibition of medicines. If from the nature of what is evacuated the vomiting appears to proceed from irritating matter collected in the ſtomach,

* Dr. Cameron diſſuades from vomiting in this caſe, and alleges that it has ſometimes occaſioned ſuffocation. He ſtrongly recommends breathing the ſteam of a decoction of marſhmallows, myrrh, and honey in vinegar and water. See the 22d vol. of the Gentleman's Magazine.

we muſt in the firſt place by draughts of ſome mild fluid aſſiſt the ſtomach to empty itſelf, and if the matter diſcharged be bilious or acid, we muſt endeavour to correct what may remain by acids or abſorbents.

If the vomiting proceeds rather from the ſtate of the ſtomach itſelf than its contents, which may be known by the inoffenſiveneſs of the matter rejected, we muſt have recourſe to ſuch medicines as tend to allay its irritability. Theſe were pointed out in ſpeaking of the ſame ſymptom in continued fever. The extract of caſcarilla given in ſome agreeable diſtilled water often allays vomiting.* In many caſes a bliſter applied to the pit of the ſtomach ſucceeds. If it ariſes from any degree of inflammation or a deranged ſtate of the bile, the means which correct theſe muſt be employed.

The ſweating is ſometimes ſo profuſe as conſiderably to reduce the ſtrength. In the worſt forms of the diſeaſe, however, and in infants in any form of it, this ſymptom rarely appears, ſo that its exceſs is leſs to be dreaded. When it ſhews a tendency to become profuſe, the patient ſhould avoid being in bed in the day time, which, with the cool regimen, laxative plan, and ſulphuric acid, almoſt always ſufficiently counteracts it.

A ſuppreſſion of urine ſometimes comes on, particularly in the confluent and anomalous forms of the diſeaſe, and proves obſtinate. People in the vigour of life, and particularly thoſe accuſtomed to a free uſe of ſpirituous liquors, are moſt liable to this ſymptom. It ſeems generally to ariſe from neglecting evacuations at the commencement of the diſeaſe, or keeping the patient too warm.

If, as frequently happens, it be attended with coſtiveneſs, we muſt begin with an emollient and laxative clyſ-

* See Vogel's Obs. on the treatment of Measles in his Prælect. Acad.

ter. When the hot regimen has been employed, Sydenham advifes the patient to be fupported by two affiftants, and expofed in his fhirt to a current of cool air. The fame practice is recommended by Bang* and others. Dr. Cameron of Worcefter obferves, in the 22d vol. of the Gentleman's Magazine, "To facilitate the difcharge of urine which is often "difficult in the fmall-pox, Sydenham directs us to get the "patients up and lead them about the room, but I would "beg all young phyficians to read Hoffman's Differtation, De "Situ erecto, in Morbis periculofis valde noxio, before they "either advife or allow of this practice. I have known fud-"den and fatal effects from it in very hopeful cafes. I think "there is no need to make fo hazardous an experiment, while "falt of amber is to be had, for that will feldom fail to an-"fwer this intention." The former part of this obfervation, however, is chiefly applicable to cafes where the debility is confiderable. Where there is much excitement, the cafe in which fuppreffion of urine moft frequently happens, although it may be proper in the firft place to try the falt of amber, there is little hazard in adopting Sydenham's plan; and where the increafe of temperature is fteady and there is no moifture on the fkin, if this plan fails it may be proper to dafh cold water on the legs, as is fometimes practifed to folicit the alvine difcharge. If there is no abfolute fuppreffion of urine, but frequent and painful micturition, fmall dofes of camphire and extract of white poppies given at intervals, will often relieve it.

One or two epileptic fits, it was obferved above, even in the mildeft forms of the difeafe, frequently precede the eruption without being attended by danger. In the confluent and anomalous forms of the difcafe, however, the fits, we have

* Praxis Med. Systematice Exposita.

ſeen, are more frequent, and in proportion to their frequency more to be dreaded. This ſymptom is rare in adults, but in them it is moſt dangerous.

Blood-letting was as at one time very generally employed to remove or prevent them, but practitioners now agree that it is ſeldom ſucceſsful; and the operation of bliſters, Dr. Cullen obſerves, comes too late.

As the violence and frequent repetition of the fits generally depend on the violence of the primary diſeaſe, the various means of moderating this, are the beſt for moderating and preventing the fits. But of all the means which have been employed, none has been found ſo ſucceſsful as opium, and the warm bath. On opium Dr. Cullen chiefly depends and adviſes its exhibition per anum while the fit laſts.

Theſe are not only uſeful as antiſpaſmodics but alſo by promoting perſpiration, one of the beſt means, it has been found, to prevent the return of the fit. Dr. Walker recommends for this purpoſe a preparation ſimilar to the compound powder of ipecacuanha. Vogel with the ſame view recommends a mixture of cinnabar, the ſulphur antimonii præcipitatum and muſk. The laſt is alſo recommended by Dr. Brocklesby and Bang, who likewiſe employed ſome other of the medicines termed antiſpaſmodic. There are none of theſe, however, much to be relied on. Cataplaſms applied to the extremities are ſometimes ſerviceable. Whatever other means are employed, laxatives are not to be neglected, as the irritation of retained fæces may renew the fits, eſpecially in children.

The puſtulary affection of the eyes is often very troubleſome, and is ſometimes, we have ſeen, followed by loſs of ſight. When the puſtules are numerous on the face, the uſe of mild and gently aſtringent eye-waſhes ſhould never be neglected. M. De Laſſone * recommends frequently wetting

* Memoire sur quelques Moyens de remedier aux accidents

the eyes and eye-lids with rose water, in order to prevent the appearance of pustules; or, if they have appeared, to diminish inflammation. Burserius recommends water, in which ignited iron has been quenched.

It is of great conseqence to prevent the eyelids from growing together, which is often the source of all the mischief, increasing the pustulary affection and preventing the use of collyria. This accident may generally be prevented, by bathing the eyes from time to time with warm milk, and anointing the tarsi with any mild ointment.

When the load of pustules on the face is very great, it has been recommended to immerse the extremities in warm water, and apply sinapisms to them, or even to scarify them.* Vogel condemns the common practice of moistening the face, with a view to prevent or moderate the eruption there. When pustules have actually appeared on the eyes, we must have recourse to emollient poultices and mild mucilaginous decoctions;† and fomentations are useful when there is much swelling of the eye-lids.

It has been observed above, that in small-pox, as in other eruptive fevers, a retrocession of the eruption sometimes happens, attended with an alarming train of symptoms. I have already had occasion to point out the means to be employed on the retrocession of other eruptions, and the observations then made are applicable to the case before us.

The treatment is in some measure influenced by the causes which produce the retrocession. The chief of these are, the sudden application of cold when the hot regimen has been em-

graves dans les Petites Veroles, in the 3d vol. of the Histoire de la Société Royale de Médecine.

* Vogel De Cog. et Cur. Morb.

† See the observations of Burserius and Tissot.

ployed, particularly if the cold be applied about the time of maturation and when the patient is much debilitated; the exceſſive employment of the hot regimen; fatigue, from remaining too long out of bed or in the erect poſture; ſyncope; ſtrong affections of the mind, particularly terror or grief; and above all, profuſe evacuations.

The remedies of moſt general application are wine and opium. Theſe, Roſen * obſerves, are particularly indicated when the retroceſſion is the conſequence of profuſe evacuations. When it is the conſequence of the ſudden application of cold, increaſing the temperature and even the warm bath are generally of ſervice, and the application of ſinapiſms and bliſters in this caſe is particularly recommended. When it is the effect of the hot regimen, cool air muſt be cautiouſly applied. Muſk and camphire, as in other caſes of repelled eruption, are very generally employed, but little to be depended on. Vogel thinks ammonia, the ſemicupium, and bliſters applied to the feet, the moſt ſucceſsful remedies. If a diarrhœa ſupervenes on the retroceſſion of the eruption, as in other ſimilar caſes, it is generally of ſervice and ſhould not be checked. Some have recommended blood-letting. But if, as Burſerius juſtly obſerves, whatever debilitates tends to occaſion this accident, blood-letting is ſurely the laſt means we ſhould think of employing.†

When the ſwelling of the face ſubſides, (eſpecially if it ſubſide ſuddenly) and is not followed by that of the hands, Dr. Brocklesby recommends the application of bliſters to the wriſts and fore arms, which often excites the ſwelling of the hands,

* Haller's Disp. ad. Hist. et Cur. Morb. pert.

† The reader who has sufficient knowledge of medicine to separate facts from theory, will find some excellent observations on blood-letting in this case, in Dr. Cameron's Paper in the 22d vol. of the Gentleman's Magazine.

or if not, tends to obviate any conſequences to be feared from its abſence. He recommends the ſame practice when the ſalivation ſuddenly ceaſes without ſwelling of the hands. When towards the period of maturation there is reaſon from the debilitated ſtate of the ſyſtem to apprehend that the ſwelling of the face may ſuddenly ſubſide, Dr. Cameron, in a paper juſt alluded to, recommends the following plan, to which the author's extenſive experience naturally calls our attention. "On "the day before the face is expected to ſink," he obſerves, "I wrap up the arms and legs lightly in a ſuppurating cerate; "the citrine, for inſtance, ſpread on linen rollers and tacked "together ſo as to make one contiguous plaiſter." ..... "I "aſſure you, I have known adults in the confluent ſmall-pox "in leſs than an hour after the application of theſe plaiſters "cry out with joy that they were in heaven. I have ſeen the "puſtules as far as the plaiſters reached, ripen and fill even to "burſting with laudable pus, and this dangerous period paſs "without one alarming ſymptom." About the ſame period the whole body has been anointed with mercurial ointment apparently with good effects.

When the ſwelling of the face and neck is exceſſive, bathing the lower extremities and applying ſinapiſms to them, often relieve it. For the ſame purpoſe Tiſſot recommends the warm bath.

When the eruption, Vogel obſerves, is delayed beyond the uſual time, a ſingle veneſection, a doſe of laudanum, and the tepid bath, ſeem frequently to promote its appearance. The firſt of theſe means muſt of courſe be employed with caution.

When the puſtules are longer of drying than uſual, they ſhould be opened; and if the dried puſtules adhere too long, fomentations are the beſt means to make them ſeparate.

When the patient is plethoric we may let blood with a view to ſtop hemorrhagies; in other caſes we muſt truſt chiefly to

aſtringents.* The ſerum lactis aluminoſum has been particularly recommended, eſpecially if the hemorrhagy be from the ſkin, tinging the matter of the puſtules. †

When puſtules appear in the nares and fauces, Tiſſot recommends waſhing them frequently by means of injections. This is preferable to gargling, as the motion of the throat in gargling ſometimes increaſes the puſtulary affection.

We have been adviſed to open the tumors, which now and then appear after the ſmall-pox, if they have ſuppurated; if not, to apply poultices to promote the ſuppuration. The propriety of the latter practice, particularly in ſcrophulous habits, is doubtful. When the ſore does not heal readily, the bark is ſerviceable, if there be no tendency to viſceral inflammation.

Various means have been propoſed to prevent pitting, but none of them ſeem to have anſwered the expectations of thoſe who propoſed them.

It is a prevalent opinion that expoſure to the air is the cauſe of pitting, from its not happening to parts which are covered. It has therefore been propoſed to cover the face with ſomething that ſhall exclude the air. The reader will find an account of this method, and arguments for having recourſe to it, in Dr. Walker's Treatiſe on Small-pox. It would require an extenſive experience to determine its ſucceſs, as pits are not always the conſequence of even a numerous eruption. Our faith in it is leſſened by reflecting that the hands are often as much expoſed to the air as the face, and that there is ſomething in the diſeaſe which determines it to affect the face in preference to other parts. The puſtules and

* Burserius's Inst. Med. Pract. The various means both local and general to be employed in hemorrhagy will be considered in another part of this Treatise.

† See the foregoing observations on the use of alum and the bark.

ſwelling always appear firſt on the ſuperior parts of the body, and the former are there moſt numerous, and in the more ſevere forms of the diſeaſe, of a leſs benign appearance. Beſides, children, I have already had occaſion to obſerve, have been born marked with the ſmall-pox.

Other means have been propoſed for preſerving the face,* but it is needleſs to give an account of them, as none have been found ſuch, as would encourage us to recommend them.

CHAP. II.

Of the CHICKEN-POX.

SECT. I.

Of the Symptoms of Chicken-pox.

THE Chicken-pox, Varicella, as it is termed by medical writers, is defined by Dr. Cullen,

" Synocha, papulæ poſt brevem febriculam erumpentes, " in puſtulas variolæ ſimiles, ſed vix in ſuppurationem euntes, " poſt paucos dies in ſquamulas, nulla cicatrice relicta, deſi- " nentes."

* See a paper by Detharding in the 5th vol. of Haller's Disp. ad Hist. et Cur. Morb. pertinent.

The chicken-pox is ſo mild a diſeaſe, that it ſeldom requires the aſſiſtance of the phyſician. It reſembles the mildeſt caſes of ſmall-pox.

In all caſes of ſmall-pox, the diſeaſe begins with more or leſs fever, on the third or fourth day of which the puſtules appear. In the chicken-pox, the eruption in many caſes, appears without any previous ſign of indiſpoſition. In others, the pocks are preceded by a degree of chillineſs, laſſitude, cough, broken ſleep, wandering pains, loſs of appetite, and feveriſhneſs for two or three days.*

On the firſt day of the eruption the puſtules are ſimilar to thoſe of the ſmall-pox; on the ſecond day there is formed on each a ſmall bladder which contains ſometimes a colourleſs, ſometimes a yellowiſh, fluid; at this time, or at fartheſt, on the third, day, the pocks arrive at maturity, and thoſe which are fulleſt very much reſemble what the ſmall-pox are on the fifth or ſixth day. It frequently happens, however, either by the rubbing of the clothes, or the patient's ſcratching to allay the itchineſs, that the veſicles are broken on the firſt or ſecond day of their appearance. When this happens, the puſtules, previouſly more or leſs raiſed, ſubſide, and the matter forms a cruſt without having aſſumed the yellow colour. Even in thoſe puſtules which eſcape being broken, it has very little of the purulent appearance. On the fifth day of the eruption the puſtules are dry and covered with cruſts, which in the ſmall-pox does not happen till the eighth or ninth day, that is, the eleventh or twelfth of the diſeaſe. The puſtules in chicken-pox are leſs inflamed, and their ſize is ſometimes leſs than thoſe of ſmall-pox, but in the latter reſpect there is often little difference.

* Dr. Heberden's Obs. Med. Trans. vol. i.

The chicken-pox is rarely confluent* or very numerous. The greateſt number which Dr. Heberden ſays he ever ſaw, was about twelve on the face and 200 on the reſt of the body. The eruption ſometimes makes its firſt appearance on the back. When this happens, it affords another mark of diſtinction, the eruption of ſmall-pox always firſt appearing about the face, neck, and breaſt.

The laſt circumſtance mentioned in Dr. Cullen's definition "nulla cicatrice relicta," aſſiſts but little in forming the diagnoſis, the milder kinds of ſmall-pox being rarely followed by pitting, and pitting having ſometimes, though rarely, been the conſequence of chicken-pox.

Upon the whole, then, the ſmall-pox and chicken-pox differ, in the eruption of the former being preceded by a fever of a certain duration, while that of the latter is either preceded by none, or one of uncertain duration; in the veſicles and ſucceeding ſcabs appearing much earlier in the chicken-pox than in the ſmall-pox; in the matter of the former never acquiring the purulent appearance, which it always does in the diſtinct ſmall-pox, the only form of the diſeaſe which can be confounded with chicken-pox. As the chicken-pox runs its courſe rapidly, and not at the ſame time on different parts of the body, thoſe puſtules which firſt appear, firſt coming to maturation and decaying, we may ſee, about the fifth or ſixth day, puſtules in all their various ſtages. "This "circumſtance," Dr. Willan obſerves, in a work juſt referred to, "may be added to the diagnoſtics of Varicella, as "it cannot take place in the ſlow and regulated progreſs of the

* The chicken-pox is ſometimes confluent. See Dr. Willan's Treatise on Vaccine Inoculation. Mr. Ring has given a coloured engraving of confluent chicken-pox in the Med. and Phys. Journal, 1805.

"ſmall-pox." The diagnoſis between theſe diſeaſes is important, as it is of conſequence to know whether or not a perſon has had the ſmall-pox.

With reſpect to the prognoſis of chicken-pox, it is ſo uniformly good, that practitioners are leſs acquainted with this diſeaſe, than with moſt other eruptive fevers; and we have reaſon to believe that it has not only been miſtaken for ſmall-pox, but that its matter has been uſed for that of ſmall-pox in inoculation.

Dr. Heberden deſcribes a diſeaſe which he believes to be only a more ſevere ſpecies of chicken-pox, in which the ſymptoms of the eruptive fever are conſiderable and continue for three or four days before the eruption appears. Nor does the fever remit on the appearance of the eruption even where there are but few puſtules. The puſtules are redder than in the common chicken-pox, ſpread wider, but hardly riſe ſo high, and inſtead of one little veſicle, they have from four to ten or twelve. In other reſpects they reſemble the common chicken-pox. He thinks the ſwine-pox and chicken-pox the ſame diſeaſe. See alſo the 1263rd and 1264th paragraphs of Lobb's Practice of Phyſic. The reader will find an excellent account of chicken-pox in Dr. Willan's Treatiſe on Vaccine Inoculation. He alſo conſiders the ſwine-pox, and likewiſe what in the northern parts of England and in Scotland is called the hives, but in the ſouthern parts of England is included under the term of ſwine-pox, as varieties of chicken-pox. So that he divides this diſeaſe into three varieties, and with great accuracy points out the diagnoſtic ſymptoms of each.

SECT. II.

Of the Cauſes of Chicken-pox.

The Chicken-pox, like other exanthemata ariſes from a ſpecific contagion, which ſeems to produce the diſeaſe about the ſame period after infection with that of the ſmall-pox. Dr. Heberden thinks that people are not liable to a ſecond attack of chicken-pox. "I wetted a thread" he obſerves, "in the moſt concocted pus-like liquor of the chicken-pox "which I could find, and after making a ſlight inciſion, it "was confined on the arm of one who formerly had the "diſeaſe, the little wound healed up immediately, and ſhewed "no ſigns of any infection."

SECT. III.

Of the Treatment of Chicken-pox.

The treatment of chicken-pox is very ſimple, and differs in nothing from that of a gentle ſynocha. The mildneſs of the ſymptoms renders blood-letting and other powerful means unneceſſary. Cooling ſaline cathartics in ſufficient quantity to keep the bowels open, with a mild and diluent diet, form the

principal part of the treatment. With respect to temperature and exercise, they should be regulated by the patient's feelings.

CHAP III.

Of the MEASLES.

THE Measles, or, as it is termed by medical writers, Rubeola, Morbilli, or Febris Morbillosa, is defined by Dr. Cullen,

" Synocha contagiosa cum sternutatione epiphora, et tussi " sicca rauca. Quarto die, vel paulo serius erumpunt papulæ, " exiguæ, confertæ, vix eminentes, et post tres dies in squa- " mulas furfuraceas minimas abeuntes."

Dr. Cullen divides this disease into two species, the Rubeola Vulgaris, and Rubeola Variolides. The former he defines,

" Rubeola, papulis minimis confluentibus corymbosis, vix " eminentibus."

Under this species he ranks three varieties.

1. " Rubeola Vulgaris, Symptomatibus gravioribus et de- " cursu minus regulari."

2. " Rubeola Vulgaris, Comitante cynanche."

3. " Rubeola Vulgaris, Comitante diathesi putrida."

His second species, the Rubeola Variolides, he defines,

" Rubeola papulis discretis eminentibus."

Of this ſpecies, he obſerves, " Sauvageſium ſecutus, hunc " morbum hic indicavi, etſi multum dubito, an recte ad ru- " beolam referendus eſt, non ſolum enim forma puſtularum " plurimum differt, ſed, quod majoris momenti eſſe videtur, " eſt plerumque abſque ſymptomatibus catarrhalibus, ru- " beolæ adeo propriis."* Matthiew is of the ſame opinion, and obſerves, that this diſeaſe is ſeldom met with unleſs the ſmall-pox be prevalent at the ſame time with the meaſles.†

The following is the diviſion of meaſles generally adopted by authors. It comprehends only the firſt ſpecies of Dr. Cullen.

1. Rubeola Vulgaris or Morbilli Regularis, the meaſles, ſuch as they generally appear when their courſe is undiſturbed by any unuſual ſymptom :

2. Rubeola Anomala, Morbilli Anomali, Morbilli Epidemici, ‡ or, the putrid meaſles, comprehending thoſe forms of the diseale in which the uſual courſe is disturbed : and

3. Rubeola Anginoſa, in which the affection of the fauces makes a principal part of the diſeaſe.

The ſimilarity of the meaſles and ſmall-pox has induced, Eller, and ſome other writers, to regard them as little more than varieties of the ſame diſeaſe.

In by far the majority of caſes, however, there is a well marked difference in the ſymptoms of the eruptive fever ; and in all, in the appearance of the eruption.

* Dr. Cullen's Syn. Nosologiæ Meth. p. 136.

† Matthiew's Observations on this species of Measles in the 47th and following pages of the 4th vol. of Baldinger's Sylloge Opusculorum Select.

‡ Morton, Huxham, &c.

SECT. I.

Of the Symptoms of Measles.

It will be ſufficient to divide the meaſles into the regular and irregular forms of the diſeaſe; the characteriſtic ſymptoms of rubeola anginoſa not being of ſufficient importance to conſtitute a ſeparate diviſion.

The diviſion of meaſles into regular and irregular, has not unaptly been compared to that of ſmall-pox into diſtinct and confluent. The irregular meaſles, however, is not ſo well defined a form of diſeaſe as the confluent ſmall-pox, and the diviſion may be more juſtly compared to that of ſmall-pox into regular and anomalous.

1. Of the ſymptoms of Regular Meaſles.

I ſhall here purſue nearly the ſame order which was followed in detailing the ſymptoms of ſmall-pox; in the firſt place, pointing out the ſymptoms which precede the eruption; then deſcribing the eruption; in the third place, enumerating the ſymptoms which attend it, and laſtly thoſe which follow it.

It is a more diſtinct plan and better aſſiſts the memory to deſcribe the different appearances of the eruption, and having done ſo, recur to the period of its commencement, than conſtantly to interrupt the account of it, to notice the ſymptoms which accompany it.

We cannot diſtinguiſh the firſt attack of meaſles from that of other fevers. The patient, for the firſt day generally complains of alternate heats and chills. On the ſecond day, though ſometimes not till the third, the fever is completely formed, and certain ſymptoms make their appearance by which it may generally be diſtinguiſhed. The ſymptoms of the eruptive fever, therefore, may be divided into thoſe which it has in common with other fevers, and thoſe which characteriſe it.

Along with other ſymptoms common to febrile diſeaſes the patient generally complains of much thirſt, often of nauſea, ſometimes attended with vomiting. The tongue is generally white and moiſt. In the more alarming caſes ſubſultus tendinum, ſpaſms of the limbs, ſometimes delirium, more frequently coma ſupervene.

The laſt ſymptom indeed ſo frequently attends the eruptive fever of meaſles, that by ſome it is regarded as one of its diagnoſtic ſymptoms. In all eruptive fevers it is more common than in fevers properly ſo called.

Pains of the head, back and loins are frequent ſymptoms; the face is fluſhed, the pulſe frequent and hard, and the reſpiration hurried. There is generally ſome remiſſion in the morning, the ſymptoms returning in the evening with increaſed ſeverity.

On the third day, the nauſea and vomiting increaſing or appearing now for the firſt time, the ſkin becomes hotter and more parched. In ſevere caſes, if the patient has hitherto eſcaped delirium, it frequently ſhews itſelf on the evening of this day, or increaſes if it had ſupervened at an earlier period. When there is no coma the inquietude is conſiderable, and the ſleep, if there be any, diſturbed. The inquietude and diſtreſs of mind, Rhazes obſerves, is greater in the meaſles than in the ſmall-pox.

The matter rejected by vomiting is generally bilious, and when a diarrhœa ſupervenes, which is not unuſual, the ſtools are frequently of the ſame kind; and in children for the moſt part of a green colour; "Quo fluxu," Burſerius obſerves, "ubi ſupervenit, vomitus et vomituritio fere ſedan-"tur." The diarrhœa, he adds, does not impede the appearance of the eruption. In other cases, however, the bowels are coſtive, and ſometimes as in ſmall-pox, there is a tendency to ſweating.*

As far as the prognoſis depends on the foregoing ſymptoms, it is collected in the ſame way as in fevers properly ſo called. The more parched the ſkin, the harder and more rapid the pulſe, the more hurried and difficult the breathing, the more the countenance is fluſhed, and the greater the coma or delirium, the leſs favourable is the prognoſis. A conſiderable affection of the breathing with an unuſually hard pulſe, is particularly to be dreaded, on account of the tendency to pneumonic inflammation in this diſeaſe.

The diagnoſtic ſymptoms are the ſymptoms of common catarrh; but in catarrh they are not accompanied with thoſe juſt enumerated, the fever for the moſt part is moderate, and always, we ſhall find, proportioned to the affection of the head, fauces, or cheſt.

On the ſecond day of meaſles, if not earlier, the patient is attacked with a dry cough and hoarſeneſs, with a ſenſe of heavineſs in the head and eyes. The cough is often ſevere and obſtinate, Morton † calls it, "Tuſſis admodum moleſta, fre-"quens, pertinax et ferina, quæ opii ipſius vires ſoporiferas

* Adults, Frank (Epitome de Cur. Hom. Morb.) says, have been observed to sweat, but not so frequently or profusely as in small-pox. These sweats, he remarks are often beneficial.

† See Morton de Morbillis in his Work De Febribus Inflammatoriis.

"plane ſuperat." A cough often precedes the eruption in ſmall-pox and ſcarlatina, but it is ſeldom ſo violent as that of the meaſles, which is ſometimes the firſt ſymptom of the diſeaſe.*

About the time that the cough generally ſupervenes, the throat becomes inflamed, impeding deglutition, and increaſing the ſecretion of ſaliva. In ſome caſes, a profuſe ptyaliſm comes on,† and there is generally a ſenſe of oppreſſion and uneaſy tightneſs about the breaſt, occaſioning ſome degree of dyſpnœa.

The appearance of the eyes, however, may be regarded as the beſt diagnoſtic. They are red, ſwelled, itchy, very ſenſible to light, and watery, tears ſomtimes falling over the cheeks.

The membrane of the noſe is alſo inflamed, a copious thin ſecretion often running from it, and occaſioning frequent ſneezing. Hemorrhagy from the noſe is not uncommon, by which the head, eyes, and fauces are relieved. It has ſometimes been ſo profuſe as to threaten danger. The various hemorrhagies which occur in ſynocha occaſionally appear in the eruptive fever of meaſles.

The eruption is leſs frequently preceded by epileptic fits, than in ſmall-pox. As in the latter, ſevere pains of the back, preceding the eruption are unfavourable.

Such is the eruptive fever of meaſles, by the ſeverity of which we may often judge of that of the ſucceeding diſeaſe.

* Sometimes, Hoffman obſerves, it troubles the patient for a fortnight before the fever comes on. Other writers make the ſame obſervation. Of an epidemic in London in 1753 Dr. Heberden remarks, the cough often preceded the measles for ſeven or eight days. In ſuch cases the cough is sometimes accompanied with pains of the throat, head and back.

† Frank Epit. de Cur. Hom. Morb.

With reſpect to the prognoſis at this period, it is derived leſs from the ſtate of the catarrhal, than of the febrile ſymptoms, unleſs the former threaten ſuffocation, which ſometimes happens in children, or we have reaſon to dread an inflammatory affection of the lungs.

It appears from what has been ſaid, that the circumſtances which diſtinguiſh the eruptive fever of meaſles from catarrh are, 1. The one diſeaſe ariſing from contagion, the other from cold. 2. The greater violence of the febrile ſymptoms compared with the catarrhal in the meaſles. 3. The ſtate of the eyes; for, however, mild the other catarrhal ſymptoms are, the affection of the eyes which in catarrh are leſs generally affected than the noſe and throat, is always conſiderable. Laſtly, certain ſymptoms which frequently accompany the eruptive fever of meaſles, and are ſeldom obſerved in catarrh, particularly coma.

When the eruption makes its appearance, it places the nature of the diſeaſe beyond a doubt. It generally ſhews itſelf towards the end of the third, or beginning of the fourth day; ſometimes not till the fifth. It comes out on the forehead, in ſmall points, which are generally diſtinct at firſt, but here and there increaſing in number and ſize, are ſoon formed into ſmall cluſters, ſo that the face ſeems marked with red ſtains of various ſize and figure. In theſe cluſters the individual puſtules are ſeen with difficulty, but are always readily felt, rendering the parts they occupy rough to the touch. While the eruption is coming out, ſome degree of moiſture is frequently obſerved on the ſkin; which is a favourable appearance.

From the face, the eruption gradually ſpreads to the neck, breaſt, trunk, and extremities. It generally appears on the extremities, the day after it ſhews itſelf on the face, ſeldom either later or earlier. Sometimes, though rarely, it does not

appear on the extremities at all.* Frank obſerves, that the morbillous like the variolous eruption, ſometimes appears in the mouth affecting the tongue.

On the trunk and extremities the ſmall puſtules are often more numerous, but they are generally leſs prominent, than on the face, ſo that on the former the red ſtains are broader, though ſeldom ſo rough, as on the latter; in all places where there is redneſs the inequality of the cuticle may be perceived. Theſe ſtains vary in different caſes, being broader and redder in ſome than in others.

Thoſe on the face continue red or rather increaſe in redneſs for two days. On the third they aſſume a browniſh colour. In the courſe of the fifth or at moſt the ſixth, that is, about the eighth or ninth day of the diſeaſe, the redneſs on the face nearly diſappears, although traces of it often remain for four or five days longer. The cuticle is now broken and raiſed in the places which the eruption occupied, ſo that the face appears covered with a light whitiſh powder.

It is obſerved by Frank and others, that when the eruption is not very favourable, it ſometimes leaves pits in the ſkin like thoſe which follow the ſmall-pox.

When the redneſs has almoſt left the face it is at its height in the extremities, where about a day or two later it runs the ſame courſe. The eruption continuing red longer than uſual, is an unfavourable ſymptom. The more early and free the deſquamation, which occaſions the whitiſh appearance juſt mentioned, the more favourable is the prognoſis. The eruption ſometimes becomes livid, and has even aſſumed almoſt a black colour. Theſe appearances indicate much danger. Sydenham and others obſerve, that they are not uncommon when the hot regimen and ſtimulating medicines have been

* Dr. Heberden.

employed, and are only to be removed by discontinuing this mode of treatment.

During the eruption, the face is turgid, but not swelled as in small-pox, and subsides as the eruption goes off. The eye-lids are sometimes so much swelled as to close the eyes.

It sometimes happens, as in mild cases of small-pox, that on the appearance of the eruption the fever entirely ceases; more frequently, however, it brings only partial relief. Sydenham and Burserius observe, that they never saw the vomiting recur after the eruption was out. But the cough and difficulty of breathing are often increased at this period, even when the other symptoms suffer a considerable remission. The affection of the eyes and coma often remain undiminished. More rarely even the febrile symptoms suffer no remission, and in some cases they become more severe, and continue so till the period of desquamation; when the remission is often preceded by a flow of sweat or of urine, a diarrhœa or other spontaneous evacuation. Dr. Heberden mentions an instance in which the cough was relieved by a copious salivation.

In some cases the fever continues, and now and then increases even after this period. The coma in particular, the author just mentioned remarks, sometimes returns, and has even proved fatal after the eruption was gone.

There is generally a considerable tendency to inflammation throughout the whole course of the measles, and those parts are most subject to it, which are most apt to be inflamed in common catarrh, the eyes, nose, fauces, and lungs. The inflammation of the eyes, nose, and fauces, is usually of little consequence; it seldom becomes very troublesome, and declines with the other symptoms. The inflammation of the lungs may supervene at any period, but is most frequent after the eruption is gone. If the fever continues the cough seldoms fails to

do ſo likewiſe, and this cough and fever often become a real pneumonia, or in ſcrophulous habits degenerate into phthiſis pulmonalis. Such indeed is the tendency to inflammation in meaſles, that blood taken at any period generally ſhews the buffy coat.*

When neither the habit nor mode of treatment are bad, however, ſuch conſequences are far from being frequent, the febrile ſymptoms are generally moderate and the danger inconſiderable. Sydenham, from very extenſive experience, has pronounced the meaſles a ſafe diſeaſe. It can only be regarded as ſuch, when the fever abates on the appearance of the eruption, and ceaſes altogether at the period of deſquamation, leaving the patient free from cough and dyſpnœa.

The diarrhœa, which is generally ſalutary towards the termination of the diſeaſe, ſometimes becomes profuſe, or even dangerous; and Frank obſerves that a profuſe hemorrhagy from the noſe has ſometimes proved fatal after the eruption had diſappeared.

Such is the courſe of the regular meaſles. It ſometimes varies in circumſtances ſo trifling, that the diſeaſe ſtill deſerves the name of regular. Thus the eruption ſometimes makes its firſt appearance on the neck or ſhoulders, inſtead of the face; ſometimes ſooner, and ſometimes later, than the uſual time, and there is ſometimes no deſquamation on its diſappearance.

Although theſe varieties do not warrant the name of irregular, yet they ſeem to indicate a diſeaſe more dangerous, and in particular more liable to be attended with inflammation of the lungs, than the moſt regular form. Thus Sydenham obſerves

* Those, says Sydenham, who had been treated with the hot regimen and stimulating medicines were most subject to inflammation of the lungs.

that more died of the meafles of 1674, in which there was no defquamation, than of that formerly epidemic. The fever and dyfpnœa, in the decline of the difeafe, were more fevere, and bore a greater refemblance to true pneumonia. Quarin * indeed remarks, that the eruption of the meafles fometimes goes off without defquamation, the ftate of the patient notwithftanding being quite favourable. Thefe variations from the common courfe, may be regarded as the connecting link between the regular and irregular forms of the difeafe.

2. Of the Symptoms of Irregular Meafles.

This is a very dangerous, but fortunately not a very common difeafe. Sydenham fays nothing of it, for that of 1674 does not deferve the name of irregular, yet it certainly raged in London during his practice. He defcribes the meafles of 1670 and 1674, and paffes over in filence the irregular meafles which raged in 1672, as we are informed by Morton, who fays that this epidemic deftroyed nearly 300 † weekly.

It appeared in the autumnal feafon, whereas the regular meafles, like other inflammatory difeafes, generally makes its appearance about January, continues to increafe to the vernal equinox, and then gradually declines, till it altogether difappears, about the fummer folftice. The irregular, like the regular, meafles, however, moft frequently appears in the vernal months.

Since the time of Morton, the irregular meafles has been

* De Febribus.

† Dr. Dickson accuses Morton of having greatly exaggerated the fatality of this epidemic. See Dr. Dickson's paper in the 4th vol. of the Medical Observations and Inquiries.

deſcribed by a variety of authors, Huxham,* Matthiew,† Burſerius, ‡ Vogel, § &c.‖

In the eruptive fever of the irregular meaſles, there are not many circumſtances to diſtinguiſh it from that of the regular. The ſymptoms in general are more violent, and the fever is ſooner formed, the affection of the eyes and the cough, being often conſiderable from the commencement. On the firſt night the patient is very reſtleſs, and on the uext day the fever generally riſes high, the cough and inflammation of the eyes increaſing.

The eye-lids are ſometimes ſo much ſwelled that they cannot be ſeparated, and the eye-ball itſelf is often ſwelled and prominent; in ſome caſes there is much pain and inflammation of the meatus auditorius.

The pulſe is now often more frequent, but leſs hard than in the regular meaſles. For the moſt part there is ſome degree of dyſpnœa, and little or no expectoration attends the cough. When an expectoration of mucus occurs, it often relieves both the febrile and local ſymptoms.

* Huxham de Aere et Morbis Epidemicis, where he gives a short account of the epidemic measles which raged in the autumn of 1742.

† See a paper by Matthiew in Baldinger's Sylloge Opus. Select. in which he gives a copious account of the irregular measles which raged in Alsace, in 1766, and 1767. In this paper the reader will find references to other writers who treat of this form of the disease.

‡ Institut. Med. Pract. The irregular measles described by Burserius differs considerably from that described by other writers, and resembles more the measles of 1674 described by Sydenham, which Burserius regards as irregular.

§ De Cog. et Cur. Morb.

‖ In the 4th vol. of the Medical Observations, the reader will find an account of this form of the disease by Dr. Watson, as it appeared in the Foundling Hospital, in the springs of 1763, and 1768. Most of the later writers on measles indeed notice it.

The reſtleſsneſs increaſes, with a parched ſkin, much thirſt, and a ſenſe of tightneſs and oppreſſion about the præcordia. If coma does not ſupervene, there is generally an acute pain, often accompanied with a ſenſe of heavineſs in the head, or delirium.

The fauces are of a deep red colour, and ſometimes aſſume the ſame appearance as in the cynanche maligna, * the tongue being very foul, and the ſtools unuſually fetid. †

The eruption frequently makes its appearance on the ſecond or third day; it is ſometimes delayed to the fourth, fifth, ſixth, or even a later period. ‡

When the eruption is delayed to the fourth or fifth day, or longer, the excitement is generally leſs than in regular meaſles, the fever often aſſuming the form of typhus at an early period. This always indicates much danger, and if the patient ſurvives, his recovery is generally very ſlow.

The eruption does not always appear firſt on the face, as in the more benign forms of the diſeaſe, but ſometimes on the ſhoulders, neck, or breaſt.

The duration of the eruption in irregular meaſles, is as various as that of the eruptive fever, though generally proportioned to it. When the eruption appears on the ſecond day, for the moſt part it diſappears on the fourth, or at moſt the fifth, or ſixth day. When it does not appear till the fifth day, or later, it is often protracted to the twelfth, fourteenth, ſeventeenth, or even twentieth day, at different times aſſuming various colours, red, pale or livid, or even black.

* See Vogel de Cog. et Cur. Morb. Dr. Cameron, in the 21st vol. of the Gentleman's Magazine, mentions several cases in which it had this appearance, so that he regarded the desease as a combination of the measles and cynanche maligna.

† Matthiew.

‡ Burserius and others.

Whether the diſeaſe is rapid or not, the febrile ſymptoms generally ſuffer a conſiderable remiſſion, and are ſometimes though not often wholly removed, after the diſappearance of the eruption. In neither caſe, however, is there any remiſſion, but generally an increaſe of theſe ſymptoms on its coming out. If nauſea and vomiting have not appeared earlier, they very frequently ſupervene after the appearance of the eruption, and are more diſtreſſing than in the regular meaſles. The affection of the throat increaſes; the ſame may be ſaid of the delirium and coma, when theſe ſymptoms have appeared at an early period; where they have not, either the one or the other often makes its appearance now. The pulſe becomes more frequent and leſs full, and when the diſeaſe has been protracted, ſmall, feeble, and often irregular; the cough and the hoarſeneſs increaſe, the breathing correſponding to the ſtate of the pulſe, becomes frequent and anxious, or the patient is oppreſſed with dyſpnœa. Symptoms denoting the laſt ſtage of debility ſucceed, dropſical ſwellings, petechiæ, the worſt kinds of hemorrhagy, tremors, ſubſultus tendinum, and convulſions, often the forerunners of death.

In general, however, the fatal termination is delayed to a later period. In the irregular, as well as the regular meaſles, the ſymptoms which take place after the eruption has diſappeared, are often moſt to be dreaded. Although the febrile ſymptoms, as we have juſt ſeen, for the moſt part, abate, the cough, dyſpnœa, and oppreſſion frequently increaſe, with a frequent, feeble, and ſometimes irregular, pulſe. Diarrhœa often comes on, but generally ſerves only to increaſe the debility. When the delirium returns, the danger is very great.

When on the contrary the ſkin becomes moiſt, the reſtleſsneſs is diminiſhed, the cough and dyſpnœa abate, and the ſtrength begins to return, the pulſe becoming fuller and leſs frequent, the prognoſis is good.

Inflammation of the lungs is more frequent at all periods of the irregular than regular meafles. Suppurations of the brain, internal ear, and other parts fometimes occur, and now and then prove fatal. In fome cafes fwellings appear about the neck, on or about the fifth day. If the patient furvives, they often form abfceffes and give much trouble.* The affection of the eyes fometimes degenerates into obftinate fores.

From what has been faid it appears, that the regular and irregular meafles differ chiefly in the following circumftances.

1. All the fymptoms, whether febrile or catarrhal, are generally more violent in the irregular, than in the regular, meafles.

2. The fever in the former always fhews a tendency to typhus.

3. In the regular meafles, the affection of the fauces always refembles that produced by cold; in the irregular, the fauces are frequently livid, and often affume completely the appearance of the cynanche maligna.

4. The duration of the different ftages of the irregular meafles is more uncertain.

The irregular meafles might be divided into two varieties, that in which the fymptoms run high and are foon terminated, and that in which they are lefs violent and longer protracted; and there is the more room for fuch a divifion, as the one of thefe varieties has been epidemic without the other making its appearance. The fame epidemic, however, often affumes both forms.

Befides the regular and irregular forms of the difeafe, there are certain varieties, as in fmall-pox, which now and then make their appearance. The fever with all its ufual

* Matthiew.

ſymptoms, Quarin obſerves, has ſometimes appeared without the eruption. Others make the ſame obſervation, the accuracy of which is called in queſtion by Frank, but not, (it appears from a variety of observations) on ſufficient grounds. *

It even appears from ſome obſervations, that the contagion of meaſles may produce ſome of the ſymptoms peculiar to the meaſles, without either fever or eruption. Dr. Home, in his account of the manner of communicating the meaſles by inoculation, which I ſhall preſently have occaſion to deſcribe, obſerves, "March 27, inoculated a child of eight "years old, with the ſame blood which had been kept ten "days looſely in my pocket-book; I was afraid when I used "it that it was too weak. The ſixth day this child ſneezed "much, but never was hot or ſtruck out. This child took "the meaſles in the natural way about two months after-"wards."

It alſo ſometimes happens that, a few days after every ſymptom of the diſeaſe is gone, the fever again returns, and is again attended with the eruption. † The ſecond appearance of the meaſles is moſt frequent in the irregular form of the diſeaſe. Matthiew obſerves of that of Alſace, that ſoon after the eruption had diſappeared, a new fever came on, followed by a ſecond eruption.

No diſeaſe is more apt than the meaſles to call into action,

"* During this measly season," (it is remarked in the fifth vol. of the Medical Essays) "several people who never had had the measles, "had all the preceding symptoms of measles, which went off in a few "days without any eruption, which they underwent months or years "afterwards." The reader will also find a case of the same kind related in Morton's work, "De Febribus Inflammatoriis Universalibus." The case is entitled, "Febris morbillosa, absque ulla efflorescentia "vel comitante vel subsequente, sanata."

† See Med. Museum, vol. 2.

if I may uſe the expreſſion, any ſcrophulous tendency. Hence its moſt frequent conſequences are, the various forms of ſcrophula; glandular tumors, marasmus from obſtruction in the meſenteric glands, obſtinate ſores * often affecting the bones, and phthyſis pulmonalis. Other inflammatory affections of the lungs are alſo frequent after this diſeaſe.

The bowels are often left in a very weak ſtate, a chronic diarrhœa remaining, which has ſometimes proved fatal.

If we except the lungs, no part ſuffers ſo frequently as the eyes, which (as appears from what has been ſaid) are much affected throughout the whole diſeaſe. The ophthalmia often remains after the other ſymptoms, and becomes obſtinate; and in ſome caſes the ſight has been loſt from ulceration of the cornea, in others from an affection of the nerve, a true amauroſis ſupervening. †

When the meaſles has been tedious and ſevere, it ſometimes terminates in dropſy, and other diſeaſes of debility.

All theſe conſequences are moſt frequent in the irregular forms of the diſeaſe.

SECT. II.

Appearances on Diſſection.

On this part of the ſubject, there is little to be obſerved.

* See the observations of Dr. Watson in the 4th vol. of the Medical Observations, and Dr. Huxham's Account of the Malignant Measles which raged at Plymouth, in 1745.

† Vogel.

If the patient dies under the eruption, the trachea and larger branches of the bronchiæ, as in the ſmall-pox, are often found covered with it; which may account for the increaſe of the cough after its appearance.

When the patient dies with a ſwelled belly and hectic fever, the glands of the meſentary are found indurated; when of phthiſis, indurated tumors of various ſize, ſome of them containing pus, and ulcers, are found in the lungs.* Such appearances, however, it is evident, are not eſſentially connected with meaſles.

It was obſerved above, that inflammation of the viſcera is more frequent in the irregular than in the regular meaſles; in the former alſo it is more liable to run to gangrene. Hence, in the accounts of the diſſection of thoſe who died of irregular meaſles, we find gangrene of ſome of the viſcera an uſual appearence. Dr. Watſon obſerves of the putrid meaſles, "Of thoſe who died, ſome ſunk under laborious reſpiration, "more from dyſenteric purging, the diſeaſe having attacked "the bowels, and of theſe, one died of a mortification in "the rectum. Beſides this, ſix others died ſphacelated in "ſome one, or more parts of the body. The girls who "died, moſt commonly became mortified in the pudendum." He alſo mentions ulcers, which were ſometimes gangrenous on the cheeks, gums, and jaws.

"Several were opened," Dr. Watſon continues, "under "different circumſtances attending this diſeaſe. In ſome "who died of laborious reſpiration, after the feveriſh heat "and eruption were paſſed, the bronchial ſyſtem was found "very little loaded with mucus, but the ſubſtance of the "lungs was tender, and the blood veſſels were very much ob-

* See the account of the appearances on Dissection in Phthisis Pulmonalis in the last volume.

" ſtructed and diſtended. In ſome who died of laborious " reſpiration and extreme debility, many ſtrong adheſions " were found between the lungs and pleura. The lungs " were diſtended with blood, and part of them had begun " to ſphacelate. Part of the jejunum was ſometimes in- " flamed and contained ſeveral worms." In ſome who died ſuddenly, it was found that the ſphacelus of the lungs had occaſioned a fatal hemorrhagy. " Collections of purulent mat- " ter," he adds, " were obſerved in none; on the contrary, " in this putrid diſeaſe, every morbid appearance indicated a " ſphacelus."

SECT. III.

Of the Cauſes of Meaſles.

THE meaſles, like the ſmall-pox, ſeems to have been unknown to the ancients, although on this indeed there is ſome diſpute.* The Arabians certainly firſt accurately deſcribed the diſeaſe. It is from them we have the name morbilli. Rhazes, in particular, gives us both its ſymptoms and the mode of treatment practiſed in Arabia, which as well as the treatment of ſmall-pox was more judicious than in modern times, till early in the laſt century.

From what we know of the hiſtory of meaſles, and what we every day ſee, we cannot doubt that it ariſes from a ſpecific contagion.

* See the observations of Matthiew and others.

So much was ſaid of contagion in general, that there is little to be added here. The meaſles appear earlier after infection than the ſmall-pox, and the time of its appearance is rather more uniform, being generally about the ſixth and ſeldom later than the eighth day. Dr. Heberden obſerves, however, that he has known its appearance delayed even to the 14th or 15th day.

The circumſtances which determine the ſeverity of the meaſles, are far from being well aſcertained; almoſt all we know on this ſubject is, that it is particularly unfavourable in plethoric, and often ſtill more ſo in ſcrophulous, habits. It appears to be leſs dangerous in pregnant women than the ſmall-pox; as in the latter, however, the fœtus in utero is ſometimes infected it from the mother.

The meaſles ſeldom attacks the ſame perſon a ſecond time, of which, however, there are a few well authenticated inſtances.*

The great ſucceſs which attended inoculation for the ſmall-pox, induced many to believe that ſimilar advantage might be expected from it in meaſles. The very prevalent opinion of the latter being received in the natural way by the lungs, and the lungs being the chief ſeat of danger in this diſeaſe, ſeemed farther to ſtrengthen the opinion. Dr. Home of Edin-

* "Nunquam enim," Morton obſerves, "in tota mea praxi novi "quemquam, præter unum puerum, ſecunda vice hoc morbo cor-"reptum." In the Medical Inſtitutes of Burſerius, the reader will find that the meaſles have not only appeared a ſecond but even a third time in the ſame perſon. "Quod ſecundo et tertio eumdem hominem in "eos incidisſe, ex fidis obſervatis conſtet;" and in the fifth volume of the Edinburgh Medical Eſſays, it is obſerved of the meaſles of 1735 and 1736, that many who had formerly had the diſeaſe were ſeized with all its ſymptoms, not excepting the eruption.

burgh, however, was the firſt who actually made the experiment.

He met with ſome difficulty from no matter being formed in the meaſles, and his not being able to collect a ſufficient quantity of broken cuticle at the time of deſquamation, to produce the diſeaſe. "I then applied," he obſerves "directly to the magazine of all epidemic diſeaſes, the blood.' He choſe the blood when the eruption began to decline in patients who had a conſiderable degree of fever. He alſo ordered it to be taken from the moſt ſuperficial cutaneous veins where the eruption was thickeſt.

While the blood came ſlowly from a ſlight inciſion it was received upon cotton, and an inciſion being made on each arm of the perſon to be inoculated, the cotton, as soon as poſſible after it had received the blood, was applied over theſe inciſions, and kept upon them, with a conſiderable degree of preſſure. He alſo uſed the precaution of allowing the inciſions of thoſe to be inoculated, to bleed for ſome time before the cotton was applied, that the freſh blood might not waſh away or too much dilute the morbillous matter. The cotton was permitted to remain on the part for three days. How far all theſe precautions are neceſſary to ſucceſs has not been determined.

Dr. Home inoculated ten or twelve patients in this way, in whom the ſucceſs of the operation was equal to his hopes. The eruptive fever generally commenced ſix days after inoculation, and the ſymptoms of the diſeaſe were milder than they uſually are in the caſual meaſles. The fever was leſs ſevere, the cough either milder or wholly abſent, and the inflammation of the eyes trifling; they watered, however, as much, and the ſneezing was as frequent, as in the caſual meaſles; nor did bad conſequences follow any caſe of inoculated meaſles. No affection of the cheſt remaining after it.

The chief difference between the casual and inoculated measles seemed to be, the absence of pulmonic affection at all periods of the latter.

Dr Home now regarded it as ascertained, that the natural measles are received by the lungs, and that on this circumstance depends the danger of the disease. He wished, however, to observe the symptoms of the disease when evidently received in this way, and therefore put a piece of cotton which had remained in the nose of a patient under measles, into that of a healthy child, making him breathe through the infected cotton. This very unjustifiable experiment, although repeated, did not succeed in inducing the disease. Nor, it is evident, if successful, would it have decided the question, whether or not the casual measles is received by the lungs. Dr. Home's experiments have not met with the attention they deserve. In scrophulous habits particularly, it would certainly be worth while to try his mode of inoculation. If more extensive experience prove it capable of producing the effects which he ascribes to it, it will certainly be an improvement of considerable importance.

It was observed above, that when the small-pox prevails at the same time with measles, the former is often of an unfavorable kind. This has been particularly remarked of the irregular measles.

SECT. IV.

Of the Treatment of Measles.

We may divide the treatment of this diſeaſe into that of regular, and of irregular meaſles.

As inoculation is not practiſed in the meaſles, we ſeldom have the advantage of certainly knowing under what diſeaſe the patient labours as ſoon as he is attacked. If, however, he never has had the meaſles, and has about ſix days before the appearance of the fever been expoſed to its contagion, and the fever is accompanied with the diagnoſtic ſymptoms above pointed out, there can be little doubt of the nature of the diſeaſe. The information required, however, cannot always be procured, and the diagnoſtic ſymptoms are often not alone ſufficiently deciſive at an early period, ſo that in many caſes we cannot poſitively aſcertain its nature, till the eruption appears. But this is not a matter of much conſequence, as the train of ſymptoms preſent require very nearly the ſame mode of treatment, whether the diſeaſe be meaſles, common ſynocha, or catarrh; the chief difference being that the ſame remedies are employed more aſſiduouſly in meaſles.

The diet ſhould be the ſame as in the more ſevere forms of the diſtinct ſmall-pox. We ſeldom ſee the meaſles ſo mild a diſeaſe as the moſt favourable inoculated ſmall-pox, for even in the leaſt dangerous forms, inflammatory affections are to be dreaded. On this account, we find practitioners inſiſting much

on a diluent and antiphlogiſtic diet. "A carnibus quibus-"cunque arcebam," Sydenham obſerves "juſcula avenacea, "hordeacea et ſimilia, nonnumquam et pomum coctum con-"cedebam." "Dietam vero diluentem," Huxham * remarks, "mollem, omni carni vacuam inſtituere oportet." Morton, Mead, Burſerius, and many others, might be quoted to the ſame purpoſe; the laſt of theſe even diſſuades from the uſe of milk. M. De Laſſone, however, having experienced the good effects of milk in the ſmall-pox, made trial of it in meaſles, and thinks it of great uſe, particularly when the bilious diarrhœa becomes profuſe. Dr. Mead recomends aſſes' milk. The debilitating effects of antiphlogiſtic meaſures, however, are never to be overlooked. When the habit is very weak, Quarin juſtly obſerves, we muſt abſtain from too much dilution.

With regard to exerciſe, if the patient find himſelf inclined, from the commencement, to remain in bed, he ſhould not be prevented; at the ſame time there is no occaſion to confine him to it againſt his inclination. In all caſes, towards the period of the eruption, he feels fatigued and averſe to motion.

Whether he be in bed or not, extremes of heat and cold are equally to be avoided. By the former we always increaſe the febrile, by the latter we may increaſe the catarrhal ſymptoms.

After the benefit derived from the application of cold in the ſmall-pox was perceived, many recommended it with equal freedom in the meaſles, and this practice is ſtill defended by ſome, particularly the followers of Dr. Brown. Sydenham, who contributed more than any other practitioner of this country, to introduce the cool regimen, when he cautions againſt keeping the patient too warm in meaſles, ſays nothing

* De Aere et Morbis Epidemicis.

of the application of cold. "Neque autem, vel ſtragulis vel "igni, quibus ſani adſueverant quidquam adjici patiebar." In other places he makes ſimilar obſervations. Morton, the contemporary and almoſt the rival of Sydenham, adopted the ſame practice, and their example has been followed by the beſt practitioners ſince their time. This much at leaſt is certain, that if experience has not proved the harm done by a free application of cold in the meaſles, the practice has not hitherto been ſufficiently general to aſcertain its ſafety;* we may, therefore, ſay of the degree of temperature, as of the exerciſe, that it ſhould in a great meaſure be regulated by the patient's feelings. It is particularly to be obſerved, that the partial or ſudden application of cold, or expoſing the patient to a current of air, is dangerous.

In moſt caſes it is neceſſary to have recourſe to other means for diminiſhing excitement. It is needleſs to repeat what has been ſaid of nitrate of potaſh, ſaline draughts, &c. theſe are uſeful in all caſes of increaſed excitement. Acids are to be avoided, if they increaſe the cough.

Gentle cathartics are indiſpenſable in all caſes. They are not only uſeful by removing irritating matter and diminiſhing excitement, but alſo by obviating the tendency to inflammatory affections of the head.

Emetics have not been much employed in this diſeaſe, except for the removal of certain ſymptoms, the treatment of which does not come under the general plan of cure.

The remedy which principally demands attention in meaſles, is blood-letting. Though its utility when the ſymptoms run high is generally admitted, there has been ſome difference of opinion reſpecting the period at which it ſhould be employed. For the moſt part Sydenham did not recommend it

* See the 650th paragraph of Dr. Cullen's First Lines.

till towards the decline of the diſeaſe; for which he has been cenſured by many, particularly Dr. Mead.* Had Sydenham, however, taken the trouble to defend his practice, he might have found many ſolid arguments to ſupport it. Unleſs the inflammatory ſymptoms run unuſually high, the danger at the commencement is inconſiderable; this period is ſucceeded by a greater or leſs remiſſion, which is often followed by a more dangerous train of ſymptoms than any which preceded them. Why ſhould we unneceſſarily reduce the patient's ſtrength in the two former ſtages, when in the laſt, more ſtrength than can remain after ſuch a diſeaſe is often required to bear without injury the only effectual means of relief. "As this fever," Dr. Cullen remarks, "is ſometimes violent before the erup-"tion though a ſufficiently mild diſeaſe be to follow, ſo "bleeding is ſeldom very neceſſary during the eruptive fe-"ver, and may often be reſerved for the periods of greater "danger which are perhaps to enſue."†

In ſome caſes, however, even unattended by viſceral inflammation, the excitement is ſufficient to warrant blood-letting at an early period. When the excitement is ſuch as threatens immediate danger or much ſubſequent debility, we muſt have recourſe to it.‡

* "Sanguis itaque, incipiente morbo, pro ætatis ac virium ratione "detrahendus est." See Dr. Mead's Monita et Præcepta Med. In this observation we perceive the remains of the hypothesis which led to an indiscriminate use of blood-letting in fevers.

† The reader will find a paper, in the 4th vol. of the Medical Observations and Inquiries, by Dr. Dickson, in which Sydenham's practice with respect to blood-letting in measles is defended, and Dr. Mead censured for his observations on it.

‡ The presence of the menstrual discharge, Dr. Heberden justly remarks, is no objection, as some have supposed, to the employment of blood-letting in the measles.

With regard to the employment of blood-letting at a late period of meafles, it cannot be fully underftood till the reader is made acquainted with its employment in inflammatory affections of the cheft.

It is remarkable that blood-letting fometimes removes certain fymptoms remaining after meafles, for the removal of which under other circumftances very little is to be expected from it. Thus it has removed cough, although unaccompanied by fever, or the other fymptoms denoting inflammation. It has even been found a fuccefsful remedy in the diarrhœa which remains after meafles. "Quin et diarrhœa," Sydenham obferves, "quam morbillos excipere diximus, venæfec-"tione pariter fanatur."

Concerning the ufe of blifters, fo generally recommended in this difeafe, it is only neceffary to repeat an obfervation already made. If our view in ufing them be to remove fever, we fhall very conftantly be difappointed; if to relieve local affections, we fhall find them a powerful remedy. I fhall prefently have occafion to make fome obfervations on the fymptoms for which they are employed.

Of the treatment of irregular meafles, it will not be necessary to fay much.

When the fever is fynocha, the treatment differs only in degree from that of the regular meafles. Cooling laxatives, and in many cafes blood-letting are neceffary, and muft be employed to fufficient extent to reduce the fymptoms of excitement, whatever be the period of the difeafe. In meafles, as in fmall-pox, a prejudice has prevailed againft letting blood before the appearance of the eruption. It is equally unfounded.

The chief difference in the treatment of irregular meafles accompanied with fynocha, and the regular form of the dif-

eaſe, ariſes from the fever in the former being apt to aſſume the form of typhus. There is perhaps no febrile diſeaſe of this country more perplexing than a ſevere caſe of irregular meaſles; the excitement often indicating the moſt vigorous antiphlogiſtic means, while debility frequently ſupervenes ſo ſuddenly as to render their uſe, even in the earlieſt ſtage, precarious.

The ſafeſt plan appears to be to avoid blood-letting, if the excitement can be diminiſhed by leſs debilitating means; if not, to employ it only to that extent which the ſtate of the ſymptoms abſolutely requires. If the excitement is prevented from riſing too high during the firſt days, the nature of the diſeaſe will ſoon overcome it, and then every ounce of blood which has been loſt unneceſſarily, adds to the danger.

When the fever has changed to typhus, the guarded uſe of wine and opiates, with bark, are the beſt medicines. There is nothing to be obſerved in addition to what has already been ſaid of them. * Some have been afraid of the bark in every form of meaſles; this fear, however, appears to be groundleſs. Among other writers on putrid meaſles, the reader may conſult for the uſe of the bark in this diſeaſe, the obſervations of Dr. Cameron, in the 1st vol. of the Medical Muſeum, and the 21st of the Gentleman's Magazine.

It only remains to point out the means to be employed when certain ſymptoms ſupervene, the treatment of which does not come under the general plan of cure. On this part of the ſubject there is little to be added to what was obſerved reſpecting the treatment of the correſponding ſymptoms in ſmall-pox.

* See the observations on the use of these medicines in continued fever.

The ſymptom which demands moſt attention is the cough, the treatment of which we ſhall have occaſion to conſider at length under the heads of Phthiſis and Catarrh.

A hoarſeneſs which now and then remains after the meaſles, when accompanied neither by fever nor dyſpnœa, is ſometimes removed by the bark.*

Dyſpnœa may often be relieved by inhaling the vapour of warm water, or by the medicines termed Antiſpaſmodic, particularly the Ammonia, when not counterindicated by the other ſymptoms. A gentle cathartic frequently relieves it. Theſe failing, we muſt have recourſe to veneſection if the pulſe admits of it; if not, bliſters are the beſt remedy. When it remains after the meaſles, a perpetual bliſter on the ſternum, or a ſeton in the ſide are the beſt means; when it is urgent and attended with fever, blood-letting is neceſſary. The treatment of this ſymptom will be better underſtood when we have conſidered that of Pneumonia.

It is proper to uſe ſome precautions to prevent the inflammation of the eyes from becoming troubleſome; expoſure to light ſhould be avoided, and they may be waſhed occaſionally with a little roſe or plaintain water. If inflammation has ſupervened, more powerful means are neceſſary, which I ſhall have occaſion to enumerate in treating of Ophthalmia.

A ſpontaneous diarrhœa ſhould be moderated, but not ſtopped, particularly by the uſe of aſtringents and opiates. When it remains after the diſeaſe, Hoffman, recommends the carſcarilla. If it does not diſappear ſoon after the febrile ſymptoms, it is to be treated like a ſimple diarrhœa, but ſtill with caution, on account of the tendency to inflammatory af-

* See a paper by Dr. Whytt, in the third volume of Essays and Observations Physical and Literary. Testaceous powders are said to be often serviceable in this hoarseness. See a paper in the second volume of the Medical Museum.

fections after the meafles. For the fame reafon it is neceffary for fome time, cautioufly to avoid expofure to cold, and the other caufes of fuch difeafes.

CHAP. IV.

Of the Scarlet Fever.

The Scarlet Fever, termed by medical writers, Scarlatina, is defined by Dr. Cullen,

" Synocha contagiofa. Quarto morbi die facies aliquan-
" tum tumens; fimul in cute paffim rubor floridus, maculis
" amplis tandem coalefcentibus, poft tres dies in fquamulas
" furfuraceas abiens, fuperveniente dein fæpe anafarca."

He divides this difeafe into two varieties, the Scarlatina Simplex, and the Scarlatina Cynanchica.

The former is defined, " Scarlatina nulla comitante cy-
" nanche."

Dr. Cullen obferves, that although in the fpace of forty years he had feen the fcarlet fever epidemic fix or feven times, it had always affumed the appearance of the fcarlatina cynanchica, and was, for the moft part, attended with ulceration of the fauces. It appears, however, from the obfervation of Sydenham and others, that the fimple fcarlatina has fometimes been epidemic, without the other form of the difeafe fhewing itfelf. It frequently happens, that in the fame epidemic

ſome have the ſcarlet fever with, and others without, the affection of the throat; while others have the affection of the throat without any eruption.*

It has long been diſputed whether the ſcarlet fever and malignant ſore throat ought to be eſteemed different diſeaſes, or only varieties of the ſame diſeaſe. This diſpute is only of conſequence from its having made ſome noiſe. I ſhall defer any obſervations on it till the ſymptoms of both diſeaſes have been laid before the reader.

The ſecond variety of ſcarlatina, Dr. Cullen defines, "Scarlatina cum cynanche ulceroſa."

In conſidering the ſymptoms of ſcarlet fever, I ſhall follow the ſame mode of arrangement as in the foregoing exanthemata.

It may ſeem proper, in laying down the ſymptoms of ſcarlatina, to keep in view the diviſion of this diſeaſe into the two varieties juſt mentioned; and this diviſion might be compared to that of the ſmall-pox into diſtinct and confluent, or that of the meaſles into regular and anomalous.

For ſeveral reaſons, however, it is unneceſſary to inſiſt much on the ſymptoms of ſcarlet fever unaccompanied by cynanche; it is not often met with; it may be readily known from what will be ſaid of the ſcarlatina cynanchica, and it is a very mild diſeaſe, and does not require any particular mode of treatment. The following is Sydenham's deſcription of it. The patient, as in other fevers, is ſeized with chills and rigors, but does not complain of much ſickneſs; ſoon after this the whole ſkin is covered with ſmall red ſtains, more numerous, broader, redder, but not ſo uniform as thoſe in meaſles; theſe ſtains remain for two or three days and diſappear with

* Dr. Clark's Treatise on Fevers, and other works on this disease.

a defquamation of the cuticle, in fmall fcales that fall off and appear again two or three times in fucceffion.*

SECT. I.

Of the Symptoms of Scarlet Fever:

At the commencement, this fever differs little from others. It comes on with laffitude, languor, dejection, chills, and fhivering, often alternating with fits of heat. The thirft is generally confiderable, and as the difeafe advances, the patient complains of a fenfe of anxiety, and fometimes of pain in the ftomach, and is frequently troubled with vomiting; but the anxiety and vomiting are rather fymptoms of cynanche maligna, than of fcarlatina.

The patient foon feels fome degree of pain about the throat, increafed on fwallowing. This is to be regarded as a favourable fymptom; in cynanche maligna there is little pain in fwallowing, and it is as it approaches to this difeafe that the scarlatina is dangerous.

The uneafinefs of the throat is fometimes among the firft

* See the 2d chapter of the 6th section of Sydenham's work, Circa Morborum Acutorum Historiam et Curationem.

ſymptoms, and in ſome caſes, it precedes the others.* The ſore throat is not often attended with cough or other catarrhal ſymptoms, but frequently with a ſenſe of ſtiffneſs in the muſcles of the neck, which diſtinguiſhes the eruptive fever of ſcarlatina from that of meaſles.

In ſome caſes, however, the eyes, as in meaſles, are inflamed, watery, and incapable of bearing the light, with ſwelling of the eye-lids and ſneezing. Rather more frequently the patient is troubled with a cough.†

On examining the internal fauces, they are found red, and more or leſs ſwelled. A florid appearance, and a conſiderable degree of ſwelling are favorable ſymptoms.

On the tonſils, velum pendulum palati, and uvula, the parts chiefly affected with inflammation, there generally appears a number of ſmall, whitiſh, or greyiſh ſpecks, or ſloughs. The darker their colour the leſs favourable is the prognoſis.

The ſkin is now very hot, the pulſe frequent, ſometimes full and ſtrong, which is a favorable ſymptom, at other times, particularly where the throat is of a purpliſh hue, and the ſpecks of a dark colour, ſmall and weak, though at the ſame time often hard, a ſtate which always indicates danger. The breathing is hurried, difficult, and ſometimes rattling. The fever ſuffers an exacerbation towards night, and when it is conſiderable, delirium or coma often comes on. Either indicates danger.

* Aaskow, Acta Societ. Hafniensis, and others.

† Frank's Epitome De Cur. Hom. Morb. The works of Morton, one of the earliest writer on the disease, and Dr. Cotton's letter to Dr. Mead on a particular form of scarlatina prevalent at St. Alban's, in 1748. Dr Sims observes of an epidemic scarlatina, that a short cough was a very frequent symptom, which was most severe when the throat was least affected.

What first seemed greyiſh ſpecks, now frequently appear ſmall ulcers. The internal fauces and mouth are loaded with viſcid mucus, and the ſwelling of the fauces increaſing, the ſwallowing becomes more difficult and painful.

In milder caſes, the ſloughs continue till the fever is paſſed, and then falling off, an ulcer appears on one or both tonſis, which for the moſt part is well conditioned, and heals readily.

Hemorrhagy from the noſe at an early period, often relieves the fauces. A thin diſcharge from the noſe, eſpecially if fetid, and if it excoriate the lips and noſtrils, is a bad ſymptom. The ſame may be ſaid of a diarrhœa, which ſeems often to proceed from the morbid ſecretion of the fauces being ſwallowed.

But the purple colour and ulceration of the fauces, the coryza at leaſt when the matter diſcharged is acrid, and the diarrhœa, are rather to be regarded as ſymptoms of the cynanche maligna than of the ſcarlatina.

If the ſwelling of the throat at any period of the diſeaſe ſuddenly ſubſide, a ſwelling ſometimes appears in a neighbouring part. In an epidemic mentioned by Dr. Ruſh, a ſwelling behind the ear often followed that of the throat. Such a tranſlation of the ſwelling generally denotes an unfavourable form of the diſeaſe. That mentioned by Dr. Ruſh approached to the nature of the cynanche maligna.

In unfavourable caſes, a little before the eruption appears, the face is ſometimes fluſhed and ſwelled. It ſometimes happens, though very rarely, that in children the eruption is preceded by an epileptic fit.*

The period of the eruption is more uncertain than in the other exanthemata. When the ſymptoms are moderate, it is

* See Sydenham's work on Acute Diseases, sect. 6th, chap. 2d, and a paper by Bang, in the 2d volume of the Acta Soc. Med. Hafniensis.

generally delayed to the third or fourth day; in more ſevere caſes, it often appears on the ſecond or even on the firſt. Bang often ſaw it on the firſt day, Dr. Clark met with it within twelve hours from the commencement of the diſeaſe, and Dr. Cotton mentions caſes in which the eruption appeared as ſoon as the fever.

The eruption firſt appears on the face, moſt frequently, about the noſe and mouth, like a red ſtain or blotch, which diſappears on preſſure.* It ſoon ſpreads over the neck, breaſt, trunk, and at length over every part of the body which often appears uniformly red. The prognoſis is then better than when the redneſs appears here and there in blotches, which is ſometimes the caſe on the trunk, while at the ſame time the redneſs is uniform on the extremities. The degree of redneſs alſo varies much; it is ſometimes ſuch, as not to be very remarkable; in other inſtances, the whole body is ſo red, that it has been compared to a boiled lobſter.

When the eruption is nearly inſpected, it appears to conſiſt of innumerable little pimples running together. Upon the extremities and in the interſtices of the blotches on the trunk, ſmall points are often obſerved more prominent than thoſe forming the ſtains, which is generally an unfavourable appearance.

The eruption ſeems much connected with the ſtate of the throat, ſo that the former is ſeldom completely and uniformly diffuſed if the latter be alarming; and on the contrary if the affection of the throat be ſlight, the redneſs is more general.

The duration of the eruption is as uncertain as the time of its appearance. It frequently remains for three or four days, ſometimes diſappears within twenty-four hours. In general,

* It sometimes makes its first appearance on the neck. See the observations of Eickel in the Act. Soc. Med. Haf. and others.

however, the red colour begins to change into a brown in the ſpace of two or three days; ſoon after this the ſkin becomes rough, and the cuticle begins to peel off, ſometimes in ſmall ſcales, at other times in large pieces, which proceſs now and then continues as late as the twenty-eighth or thirtieth day. In moſt inſtances it is finiſhed much ſooner.

The nails have, though very rarely, been caſt off with the cuticle; ſometimes the cuticle of the tongue peels off at the ſame time * The tongue, Eickel obſerves; becoming clean while the deſquamation goes on, is a favourable appearance.

When the deſquamation begins, a gentle ſweat very generally appears, and all the ſymptoms abate and are ſoon wholly removed.

Such is the general courſe of the eruption in ſcarlatina; conſiderable variations have occaſionally been obſerved. "Die "autem morbi quarto, quinto, vel ſexto, ſinguli ſcarlatinam "effloreſcentiam per cuticulam ubique ſparſam perpetieban-"tur, eamque per ſeptem, octo vel decem dies protenſam."† The moſt remarkable variety in the eruption of ſcarlatina is analogous to the variety of meaſles, termed Rubeola Variolides. "In ſome," Dr. Ruſh obſerves, "an eruption like the "chicken-pox attended the ſore-throat." This variety is called by Sauvages Scarlatina Varioloſa.

The ſymptoms which accompany the eruption differ little from thoſe which precede it. The febrile ſymptoms are ſeldom relieved by its appearance. The inflammation and ſwelling of the internal fauces in ſome caſes abate; in others, they are increaſed; and the viſcid mucus, which is now often ſecreted in conſiderable quantity, renders the deglutition more difficult. The ſwelling, however, is ſeldom ſo great as it fre-

* See the observations of Bang and others.

† Morton De Feb. Scarlat.

quently is in other kinds of ſore-throat. When the maxillary and parotid glands partake of the ſwelling, it is ſometimes ſo conſiderable as to affect the breathing.

The mucus frequently aſſumes the appearance of a cruſt covering the tonſils and neighbouring parts. When by the uſe of gargles it is waſhed off, which may readily be done, the ſurface ſometimes appears inflamed but ſound, at other times covered with ſmall ulcers. In the worſt caſes, ſmall maſſes reſembling coagulated blood are frequently ſpit up, and the acrid ſecretion from the nares is increaſed or ſupervenes if it did not appear before the eruption, excoriating the lips and noſtrils. The eyes aſſume a dull and heavy apearance, and the face ſeems bloated, and is affected with œdematous ſwelling; the hands and fingers are often affected with the ſame kind of ſwelling, and painful on preſſure; or ſevere pains of the extremities without ſwelling, much reſtleſſneſs, delirium or coma ſupervene But ſuch caſes belong rather to cynanche maligna than ſcarlatina.

In the moſt favourable caſes the ſymptoms upon the whole become milder after the appearance of the eruption. The febrile ſymptoms indeed are ſeldom much relieved, bnt the inflammation and ſwelling of the fauces begin to abate, and by the time the eruption is over, if there be a free deſquamation with moiſture on the ſkin, have wholly diſappeared, at moſt leaving only ſuperficial ulcers of the tonſils, which ſoon heal.

The fever now abates, and for the moſt part in a ſhort time wholly diſappears, more or leſs of an œdematous ſwelling appearing on the legs and ſometimes over the whole body, which in two or three days goes off without the aſſiſtance of medicine; and the debility which remains, as the appetite is generally keen, is ſoon removed by a nouriſhing diet. In leſs favourable caſes, the febrile as well as other ſymptoms con-

tinue to harrafs the patient after the eruption has difappeared.

It fometimes happens that although the patient is free from complaint for fome days after the eruption is paffed, yet in a fhort time, particulary if the fkin has remained dry during the defquamation, fymptoms of fever again fhew themfelves, and as fometimes happens in the other exanthemata, have been followed by a fecond eruption.*

A running from the ear now and then comes on towards the decline of the difeafe, and is fometimes very copious and fetid, by which the hearing has been impaired or wholly loft. It fometimes happens that a fwelling of the parotid glands comes on at the fame period, which is now and then relieved by a fpontaneous falivation. The fwelling of the parotid glands is unfavourable, the running from the ear more fo, and the prognofis is ftill worfe if both fymptoms attend, efpecially, Eickel obferves, if the parotids fhew a tendency to fuppuration, from which, he fays, he never obferved any benefit.†

The fwelling of the parotids is generally relieved when the

* If the skin remains dry, Eickel observes, after the beginning of the desquamation, the disease will either be dangerous or protracted; the affection of the fauces and fever become worse, and in some cases a new eruption appears on the face and neck; which unfavourable symptoms, he adds, generally disappear as soon sa the skin becomes moist. The same author remarks, that a similar train of symtoms are also most apt to appear in the measles and erysipelas, when the skin remains dry at the time of desquamation.

† The swelling of the parotid glands, Dr. Sims obsreves, occurs at various periods of the disease, and seems when it is late of appearing to protract all the symptoms, or even to renew them after they had ceased, the eruption itself not excepted. See a paper by Dr. Sims in the 1st vol. of the Memoirs of the London Medical Society. Plenciz in his Tractatus de Scarlatina, Quarin in his work De Febribus, and others, make similar observations.

running from the ears is conſiderable, and again increaſes when this is leſſened. While the running from the ear and the ſwelling of the parotids remain, it is very difficult to produce a general moiſture on the ſkin.

Sometimes the ſymptoms which ſucceed the eruption take a different turn, the patient falls into obſtinate anaſarcous ſwellings, or is attacked with dropſy of ſome of the cavities. When the ſwelling of the glands about the neck ſuppurate, obſtinate ſores, at the ſame time, often form in the noſe and ears, and even affect the bones. The mouth, lips, and palate, and the parts in the neighbourhood of the anus, alſo occaſionally ſuffer from ulceration.

The inflammation ſometimes ſpreads to the trachea and lungs, occaſioning hoarſeneſs, violent coughing, and wheezing, or rattling breathing; * or, as in caſes mentioned by Drs. Ruſh, Home, and others, a ſqueaking voice ſimilar to that which attends the croup.†

Symptoms of debility often accompanied with ſcanty, ſometimes with bloody, urine, have now and then appeared after the patient has remained well for ſome days or even weeks. This train of ſymptoms is mentioned by Plenciz, Quarin, and De Haen in the continuation of the 1ſt vol. of his Rat. Med. Dr. Sims and Dr. Withering mention a ſimilar train of ſymptoms. ‡

* See the observations of Dr. Clark.

† In the case of Dr. Morton's daughter, related by him, the scarlatina terminated in an intermitting fever, which was removed by the bark.

‡ These symptoms indicate a tendency to dropsy, as farther appears from the treatment found most successful in them. Diuretics and cathartics, De Haen observes, were sometimes serviceable, diaphoretics very rarely. The medicine chiefly recommended by Plenciz and De Haen, has for its principal ingredients calomel and squills. The cases

Although the ſwelling of the parotids has not previouſly appeared, it ſometimes attends the anaſarca, and even goes on to ſuppuration. The reader will find caſes of this kind mentioned by Bang, who obſerves that epileptic fits ſometimes both precede and follow the dropſical ſwellings. De Meza alſo ſays, that during theſe ſwellings he has ſeen both children and adults ſeized with epilepſy, which did not, however, prove dangerous, and ſeemed generally owing to expoſure to cold, or ſome error in diet.

Death ſeldom happens at a very early period of the ſcarlatina. When the ſymptoms run high and the eruption appears on the firſt or ſecond day, the patient is ſometimes carried off on the fourth or fifth, in other caſes ſeldom ſooner than the eighth or ninth day, and often later.*

It may be obſerved upon the whole, that the true ſcarlet fever is a very mild diſeaſe. It is only in proportion as it partakes of the nature of the cynanche maligna that it becomes dangerous. In collecting the prognoſis, therefore, the ſymptoms ſhewing a tendency to the cynanche maligna particularly, demand attention. Theſe I ſhall recapitulate, contraſting them with the correſponding ſymptoms of the mild ſcarlatina. They are not only of conſequence in determining the prognoſis, but of the firſt importance in regulating the treatment of the diſeaſe.

If the ſcarlatina makes its attack with only a degree of laſſitude. languor, dejection of ſpirits, and ſhivering, the diſeaſe promiſes to be leſs dangerous, and to opproach leſs to the nature of cynanche maligna, than when, along with theſe ſymptoms, the patient is troubled with anxiety, nauſea, and vomiting.

mentioned by Dr. Withering often terminated in confirmed dropsy. See Dr. Withering's Treatise on Scarlatina.

* Dr. Clark on Fevers.

If the internal fauces are of a florid colour, and confiderably fwelled, with difficult and painful deglutition, the prognofis is better, than when they appear of a dark red or purple colour, without fwelling, the deglutition being eafy and attended with little or no pain.

If the fpecks, which appear about the tonfils, velum pendulum, and uvula, be of a whitifh colour and are not foon changed into ulcers, the difeafe is more favourable, than when they are of an afh or brown colour, and become ulcerous at an early period.

When there is no running from the nofe, or fuch as produces no excoriation, the prognofis is better, than when a thin acrid and fetid fecretion runs from it.

It is alfo a fign of the mildnefs of the difeafe to be unattended with purging, and of great danger when the purging excoriates the anus.

When the pulfe is ftrong and full the difeafe is lefs dangerous, than when it fhows a tendency to become weak and irregular.

When the patient bears the difeafe well, and without much lofs of ftrength, his fituation is more favourable than when he is reftlefs and debilitated.

When the mental functions remain unaffected, the prognofis is better than when delirium or coma fupervene.

If the eruption is delayed till the third or fourth day, the difeafe is fafer than when it appears earlier.

When it is univerfal, every part of the body becoming uniformly red, the prognofis is better than when it comes out here and there in ftains or blotches, or in fmall points.

A tendency to fwelling in the neck, hands, and feet, and the eruption being lefs on the trunk than the extremities, add to the unfavourable prognofis.

The fame may be faid of the eruption appearing unfteady,

glandular ſwellings coming on, and the fever not remitting at the period of deſquamation.

When the dyſpnœa is conſiderable, without much ſwelling about the throat, there is reaſon to apprehend that the inflammation has ſpread to the trachea, which is always an alarming accident.*

Hemorrhagies in general are unfavourable, except at an early period and when the excitement is conſiderable. Bloody ſaliva † in particular denotes an unfavourable ſtate of the fauces.

All anomalous conſequences of the ſcarlatina are to be dreaded.

SECT. II.

Of the Cauſes of the Scarlet Fever.

THERE is no mention of the ſcarlet fever in the works of Hippocrates; nor do we find it mentioned as a diſtinct diſeaſe by any other of the Greek or Roman writers. Some of them have taken notice of a ſcarlet raſh as an accidental occurrence in fever.

Proſper Martianus, an Italian phyſician, is among the earlieſt writers on this diſeaſe. He gave an account of the ſcar-

* The inflammation also sometimes extends along the œsophagus to the stomach. See what was said in speaking of this accident in the aphthous fever.

† Plencig's Tractatus de Scarlatina.

latina as it appeared at Rome about the middle of the ſeventeenth century. It ſoon after made its appearance in London, and was deſcribed both by Sydenham and Morton, who term it Febris Scarlatina. Sydenham deſcribes it in its mildeſt ſtate. Morton in its more ſevere forms, and varying in ſome reſpects from the ordinary courſe of the diſeaſe; but he did not always diſtinguiſh very accurately between meaſles and ſcarlatina. The diſeaſe deſcribed by Proſper Martianus reſembles that deſcribed by Sydenham. *

The cynanche maligna, ſo intimately connected with the ſcarlatina, is ſaid to have made its firſt appearance about the year 1610, in Spain, where it is called Garrotillo From Spain it ſoon ſpread to other countries of Europe. It appeared in Naples, in 1618, where it raged for twenty years, deſtroying great numbers. If we compare the accounts of theſe epidemics with what Sydenham and Proſper Martianus say of the ſcarlatina, we ſhall be inclined to believe that this fever and the cynanche maligna, on their firſt appearance, were more diſtinct diſeaſes than we now find them to be.

It appears from the hiſtory of the ſcarlatina, that its exciting cauſe is a ſpecific contagion. Concerning its prediſpoſing cauſes little has been determined. It has only been ascertained that childeren are more ſubject to it than adults, and thoſe of a lax habit of body, than the more robuſt. Females have generally been ſuppoſed to be more liable to it than males. †

* The scarlet fever which Morton describes, prevailed in the same year in which Sydenham died, which is the reason we do not find it mentioned by the latter.

† It seemed particulary fatal to girls, Dr. Simms observes, from two to eight years of age. He saw but one child at the breast who had it, and that but slightly. Dr. Fothergill observes, that women are more subject to it than men. This, however, is contradicted by the

The ſcarlet fever may appear at any ſeaſon of the year, but it moſt frequently ſhews itſelf about the end of ſummer. It is ſometimes checked by a ſevere winter. Dr. Sims remarks that he has ſeen it wholly at a ſtand during ſome days of ſharp froſt, after which it ſeemed to recover new vigour. It generally diſappears in the ſpring, but has been known to continue for ſeveral years, and conſequently has withſtood the different ſeaſons.

Phyſicians have endeavoured to aſcertain the circumſtances which determine the ſeverity of this diſeaſe. "The remote "and external cauſes," Dr. Clark obſerves, "which had the "moſt obvious influence in rendering the epidemic malignant, "may be reduced to the three following, namely, the heat "and moiſture of the air, and effluvia ariſing from many "perſons being crowded together in the ſame houſe, or often "in the ſame room."

I have ſeen it at the ſame time aſſume all its various appearances in different individuals of the ſame family. We have reaſon to believe that it is moſt ſevere in the debilitated and the plethoric. In the latter I have known it aſſume its worſt form, while in others ſimilarly circumſtanced it proved very mild.

Reſpecting the means of prevention, there is nothing to be added to what was ſaid when ſpeaking of contagion in general. *

obſervations of Dr. Clark: see Dr. Clark's Table of Patients labouring under Scarlatina, received into the Newcaſtle Diſpenſary; and Bang aſſerts that all under thirty are equally ſubject to it. But whatever may have happened in the particular epidemics which he ſaw, it has been well aſcertained, that those under puberty are moſt liable to this diſeaſe.

* Dr. Sims ſays, he found rhubarb given in ſmall doſes, ſo as to

It has been afferted by fome, that the fcarlatina never attacks the fame perfon a fecond time. Bang and others declare they never knew this happen. More extenfive obfervation has contradicted this opinion. It appears, however, that the fcarlatina properly fo called, namely, that in which the eruption is complete, very rarely attacks the same perfon a fecond time; that in which the eruption is imperfect and the affection of the throat confiderable, is more apt to do fo. The recurrence of the true cynanche maligna in the fame perfon has not been queftioned, although this difeafe, alfo, is lefs apt to attack thofe who have formerly laboured under it. It is obferved in the Edinbnrgh Medical Effays, that fuch as formerly had had fcarlet fever without fore throat, were now attacked with the fore-throat without the eruption; thofe who had formerly had the fore-throat, now had the fever and eruption without any affection of the throat. There are even inftances in the fame epidemic of the fame perfon having the difeafe firft in the one form, and then in the other.

SECT. III.

Of the Treatment of the SCARLET FEVER.

As the treatment of fmall-pox was divided into that of the diftinct, and that of the confluent form, and the treatment of

support a moderate catharsis, a good preventive. He also thought it was of use in moderating the ensuing disease, when given between the period of infection and the commencement of the disease.

meafles into that of regular and that of irregular meafles, fo the treatment of fcarlatina may be divided into that of fimple fcarlatina, and that of the fcarlatina cynanchica.

It is unneceffary to enter particularly into the treatment of the former; it differs little from that of a mild fynocha, and confequently little from that of the diftinct fmall-pox, or regular meafles. The particular nature of thefe difeafes, however, points out fome difference in the treatment of even the mildeft cafes, which is not to be overlooked.

In the fmall-pox, the application of cold can hardly be too free. In the fcarlatina, from the greater tendency to inflammatory affections, it requires more caution. Any fudden or partial application of cold in meafles is ftill more to be feared, the catarrhal fymptoms always demanding particular attention, which is not the cafe either in the diftinct fmall-pox, or fimple fcarlatina. As the fever in diftinct fmall-pox ceafes when the eruption is completed, and as the application of cold is very free, other antiphlogiftic meafures are lefs neceffary than in the meafles and fcarlatina, where even in mild cafes the fever ufually does not ceafe while the eruption is out, and an equally free application of cold is inadmiffible. Befides, the greater tendency to inflammation in the meafles and fcarlatina, enforces the neceffity of an attention to the antiphlogiftic plan; and as the meafles are moft apt to be accompanied with or followed by vifceral inflammation, in it a ftrict attention to this plan is leaft difpenfable.

Many recommend the cold affufion in the fcarlet fever; and regulate its employment in the fame way as in fimple fever, without regard to the prefence of the eruption. In the fecond volume (fecond edition) of Dr. Currie's work on the ufe of cold and warm water in fevers, the reader will find his obfervations and thofe of Dr. Gregory of Edinburgh, on this fubject, with a minute detail of cafes, in which the cold

affusion was employed. The cold affusion has been unintentionally employed in measles. "I should have been still less inclined," Dr. Currie observes, "to have prescribed it intentionally in the measles, on account of the disposition to pulmonary affection which attends that disease. It has happened to me, however, to have directed it four different times by mistake, in the eruptive stage of measles, and in like manner, the disease that followed was singularly mild in every instance."

With regard to the treatment of the scarlatina cynanchica, as this form of the disease may be regarded as a combination of the simple scarlatina and cynanche maligna, its treatment cannot be understood without a knowledge of the latter. For the treatment of the scarlatina cynanchica, therefore, I must refer to what will be said under the head of cynanche maligna, in the next volume.*

* The reader will find an excellent account both of the scarlatina and measles in Dr. Willan's Treatise on cutaneous diseases, and exceedingly good engravings, illustrating his descriptions. Of the scarlatina, especially, he gives a very full account, with copious quotations from the principal authors on it. I shall have occasion to refer more particularly to his observations on it, in treating of the cynanche maligna, which he considers as the same disease with scarlatina.

He thinks that when the eruption of measles appears with little or no fever, or catarrhal affection, as sometimes happens when this disease is prevalent, it does not secure against a second attack. The measles and scarlatina have frequently been mistaken for each other; to this he ascribes many supposed cases of the former having occurred a second time in the same person. This does not seem surprising when it is considered that diseases so different as small-pox and measles, have not always been distinguished. The Arabian physicians, although they give very good accounts of both, treated of them as the same disease, and it appears from what is said above (p. 428) that the moderns are not wholly free from this charge. He notices a mode of inoculating for measles, from the matter of miliary pustules which sometimes appear

CHAP. V.

Of the PLAGUE.

THE plague is defined by Dr. Cullen,

"Typhus maxime contagiosa. Incerto morbi die eruptio "bubonum vel anthracum."

Although few Britiſh phyſicians have occaſion to practiſe in the plague, the propriety of being acquainted with a diſeaſe, which has demanded ſo much attention, and bears ſo ſtrong an analogy to diſeaſes which every day fall under their care, is apparent. Beſides, we cannot foreſee in what circumſtances we may be placed; and for a phyſician to betray ignorance of the plague would be unpardonable.

There are few diſeaſes ſo remarkably varied, and there are

in the eruption of this disease when at its height. From the few trials which have been made of it, independently of our seldom having an opportunity of putting it in practice, it seems more uncertain and less capable of producing a mild disease, than the method practised by Dr. Home, with which Dr. Willan does not seem to have been acquainted. He remarks of the measles as has been frequently remarked of the small-pox, that children sometimes have it before birth. Some have been born with the eruption, and others with traces of having had it.

few, perhaps none, of which it is more difficult to give an account, which ſhall be at the ſame time ſufficiently full and diſtinct.

As much as poſſible to prevent confuſion, authors have divided the plague into different claſſes; nor is it poſſible without this to give a juſt view of it, ſince no two diſeaſes are more oppoſite than its different forms. In one we ſhall find it the moſt dreadful of all fevers, deſtroying without exception all whom it attacks; in another we ſhall find it conſiſting chiefly of an eruption unattended by danger. Why, it may be aſked, are diſeaſes ſo different, regarded only as varieties of the ſame? However different theſe extremes, they are not only produced by the ſame ſpecific contagion, but almoſt inſenſibly run into each other; from which ſome idea may be formed of the variety which the plague preſents.

I ſhall not ſpend time by laying before the reader the modes of arrangement adopted by different writers, or by pointing out the objections which might be made to them. The objections conſiſt chiefly, in many of the diviſions not being marked with ſufficient preciſion, ſo that it is often impoſſible to ſay what are the correſponding diviſions in the different accounts of the diſeaſe; as the reader will perceive if, for example, he compare together the different accounts of the plague in the Traité de la Peſte, or any of theſe with the diviſion adopted by Dr. Ruſſell in his Treatiſe on the diſeaſe.

In dividing a diſeaſe into varieties, each variety muſt be diſtinguiſhed by ſome ſymptom or train of ſymptoms which conſtantly attends it, not accidental or unconnected with the ſtate of the ſymptoms in general, which would render the diviſion uſeleſs, but marking a variety, in which the ſymptoms on the whole, and, what renders the diviſions of more importance, the prognoſis, differ from thoſe of other forms of the diſeaſe.

I ſhall not defer a particular account of the eruptions, namely, the buboes, carbuncles, &c. till after the different forms of the diſeaſe have been conſidered, as has generally been done, by which we are forced to uſe terms before they have been defined; and it is equally objectionable, where the variety of ſymptoms is ſo great, and where there is ſo much to be ſaid of the different eruptions, to interrupt the account of the general courſe of the diſeaſe, in order to deſcribe them. It appears neceſſary, therefore, to depart from the order which has been purſued in laying down the ſymptoms of the other exanthemata, and to regard bubo, carbuncle, &c. as terms which muſt be defined, before we proceed to conſider the ſymptoms of the plague.

SECT. I.

Of Peſtilential Eruptions.

1. Of Peſtilential Buboes.

A PESTILENTIAL bubo at its commencement is a ſmall, hard, round tumor, readily perceptible to the touch, about the ſize and ſhape of a pea, it is moveable under the ſkin, the appearance of which is not altered at an early period, the bubo lying at a greater or leſs depth, and the ſwelling not appearing externally.

As the tumified gland enlarges, it changes from a round, to an oval, ſhape, becoming at the ſame time leſs moveable. The

integuments now begin to thicken and the ſwelling to appear externally.

The appearance of the bubo is often preceded by a ſenſe of tightneſs and pain ſometimes lancinating, or itchineſs, in the part where it is about to appear, now and then accompanied by ſhivering. In many caſes, however, the ſmall ſwelling juſt deſcribed comes on without being preceded by any peculiar ſymptoms.

Some buboes are indolent and inſenſible, others very ſenſible and rapid in their progreſs. The tumor advancing quickly to ſuppuration, is uſually regarded as favourable.*

It is difficult to foreſee in what way a bubo will terminate. The fluctuation is often ſcarcely perceptible where ſuppuration has taken place, and buboes are ſometimes reſolved after fluctuation has been very evident. Their progreſs indeed is almoſt always more or leſs irregular, eſpecially after the firſt week. At one time they ſeem advancing to ſuppuration, at another ſhow a tendency to reſolution. "But theſe variations," Dr. Ruſſell † remarks, "chiefly reſpected the integuments; for the gland itſelf when carefully explored was ſeldom found to alter, and where the tumor actually diſperſed, it was not ſuddenly but by ſlow degrees. At the ſame time I am far from thinking that this fluctuation was never real." And Chenot ‡ obſerves, "Vidimus quoque abruptam ſuppurationem in his reſuſcitari ac demum per effuſionem puris abſolvi."

The bubo as it increaſes in ſize becomes ſomewhat flat; and generally in the ſecond week, the ſkin over it grows tenſe and painful, and begins to be inflamed. In ſome caſes the inflammation is moderate, in others conſiderable; but it ſeldom

* De Mertens' Account of the Plague of Russia.

† See his Work on the Plague.

‡ Chenot De Peste.

terminates in gangrene, although the ſkin now and then aſſumes a bluiſh colour.

It ſometimes happens, however, that the bubo runs to ſuppuration without any degree of inflammation appearing on the ſkin, and then, as it is generally harder than a ſuppurated venereal bubo, it is often difficult to determine whether ſuppuration has taken place or not. When buboes break ſpontaneouſly, it generally happens in the third week, ſometimes later.

Buboes moſt frequently appear in the groins or a little lower, among the loweſt cluſters of the inguinal glands; they alſo frequently appear among the axillary glands; ſometimes, though more rarely, in the parotid, the diſeaſe is then by many reckoned moſt dangerous. They ſtill more rarely appear in the maxillary or cervical glands.

"The maxillary and cervical glands," Dr. Ruſſell remarks, "were ſeldom obſerved to ſwell without either the "parotid ſwelling at the ſame time or ſoon after, or a car-"buncle protruding near them; they never were the ſole "peſtilential eruptions, and I recollect few inſtances of their "coming to maturation.". It has been remarked by others, that the parotid bubo ſeldom appears unaccompanied by one or more in the axilla or groin.

It may upon the whole be obſerved, that the axillary buboes ſuppurate more frequently than thoſe ſituated about the fauces, and the inguinal more frequently than the axillary.

Buboes often make their appearance on the firſt day; ſometimes indeed they are among the firſt ſymptoms. It has been obſerved, that when they appear later than the third or fourth day, they are generally preceded by an exacerbation of the febrile ſymptom. Thoſe which come out at ſo late a period, however, are not, for the moſt part, the firſt which appear; for a ſucceſſion of them ſometimes takes place, till three

or four have made their appearance. In this caſe ſeveral hours uſually intervene between the appearance of any two.

When the inflamed gland advances to ſuppuration more rapidly than the integuments, troubleſome fiſtulous ulcers are ſometimes formed, if an artificial opening has not been made in the ſkin. This accident, however, is rare; in general the buboes, left to themſelves, give little trouble.

When they do not suppurate, and the patient recovers, they generally diſperſe in the ſpace of a few weeks. In ſome caſes, whether they have ſuppurated or not, they are ſucceeded by an induration of the glands which remains for many months. This induration never terminates in cancer.

Such are the circumſtances to be learned from attending to the external appearances of buboes; ſome further circumſtances, of leſs moment however, have been aſcertained by diſſection.

It has been the practice of many, particularly the French ſurgeons, to extirpate the buboes; which gave them an opportunity of obſerving the internal change which takes place in them. From the appearances on diſſection they have been divided into ſeveral different ſpecies. It is unneceſſary to detain the reader with an account of this hitherto uſeleſs diviſion; he will find it at length in the Traité de la Peſte from the 428th to the 434th page. One obſervation deſerves attention; it has juſt been remarked, that the ſkin covering the buboes never runs to gangrene; diſſection ſhows that it is otherwiſe with reſpect to the gland itſelf. "Je coupai par le mi-
"lieu celle (h. e. the bubo) qui etoit ſur les vaiſſeaux, que je
"trouvai toute noire." "Le lendemain j'ouvris le bubon,
"j'y trouvai le corps glanduleux comme un rein de mouton,
"tout noir."*

* See Traité de la Peste, p. 447, 448.

Another peſtilential eruption has received the name of bubo, and to diſtinguiſh it has been called ſpurious. It is ſo rare, that ſome who mention it, have been accuſed of miſrepreſentation.

The principal circumſtance in which the ſpurious, differs from the true, bubo, is in the former appearing indiſcriminately on almoſt every part of the body,* while the true bubo is confined to the parts juſt mentioned.

Spurious buboes, if they are not lanced at a proper time, ſometimes grow to a great ſize, particularly thoſe on the ſcapulæ or back; in other parts they ſeldom much exceed the ſize of a hen's egg. They generally make their appearance about the ſecond or third day, and for the moſt part, after the protruſion of true buboes or carbuncles. They ſuppurate leſs rapidly than true buboes.†

2. Of Carbuncles,

Next to buboes, carbuncles are the moſt remarkable of the peſtilential eruptions.

The reader will find them divided by different writers into ſeveral varieties. One makes three, another four, a third five.

Dr. Ruſſell divides them into five varieties.

The firſt appeared in the form of a ſmall puſtule about the ſize of half a pea, on its upper ſurface of a duſky or yellow colour, and a little wrinkled. The ſkin which immediately ſurrounded this puſtule was hard and inflamed. The puſtule itſelf ſoon became very painful and continued to increaſe, till it was of the ſize of a nutmeg, and ſometimes that of a walnut; and a yellowiſh matter was ſecreted under the cuticle, which was ſometimes moiſt, at other times dry

* Dr. Russell's Treatise on the Plague, p. 119.

† Traité de la Peste, part 1st, p. 435.

and crusty; the base assumed a dark reddish colour, the circle which surrounded it appearing at different times of various hues.

On the third, fourth, or fifth day of the carbuncle, a gangrenous crust appeared on the middle of it, which soon occupied the whole surface of the tumor, exactly resembling the black eschar formed by caustic.

This crust, when the termination was favourable, was thrown off by suppuration, leaving an ulcer of various depth, which for sometime continued to secrete matter. When the case terminated fatally, the crust remained dry and often spread to the inflamed circle, so as to form a gangrene of considerable extent.

The second kind of carbuncle appeared in the form of a small angry pustule, not rising so high as the former, more disposed to spread, and becoming gangrenous on the second day. In this state it was not easily distinguished from the other, but was generally surrounded with a more highly inflamed ring. It chiefly attacked tendinous parts, particularly the joints of the fingers and toes.

In the third variety, the cuticle was at once raised into a blister of the size of a horse bean, filled with a dusky yellow or blackish fluid, and the skin which surrounded this variety, was less tense and of a paler red, than that surrounding either of the foregoing. When the blister broke, the cuticle fell upon the flat surface, which was of a dark colour and soon became black. At this period, that is about the third or fourth day of the carbucle, it resembled the preceding varieties, except that it was flatter. The circle surrounding the eschar gradually assumed a very dark red, but never became gangrenous. The eschar was about the size of a six-pence. This carbuncle was very painful, and five or six sometimes appeared on the same patient.

The fourth variety was a ſmall red ſpot raiſed only to the touch, which gradually roſe higher and ſpread, till in 24 hours it was a flattiſh duſky puſtule, ſurrounded by a light roſe-coloured margin It was very painful, and when it appeared on the face occaſioned ſwelling without inflammation of the ſkin. It often became black beyond the roſe-coloured margin on the ſecond day, and the mortification ſpread to neighbouring parts. This ſpecies of carbuncle always accompanied other eruptions, and was uſually pretty numerous.

The fifth and laſt variety was on the ſecond day a puſtule reſembling that of the ſmall-pox; it roſe in the form of a cone to twice the ſize of a large diſtinct pock with a blunt yellowiſh point, which, inſtead of advancing to ſuppuration, became black to the ſize of a large field pea. The gangrene, however, did not ſpread farther. The margin became of a duſky red, but appeared brighter as the ſuppuration which threw off the eſchar advanced. After the ſecond day, it differed from the third and fourth varieties only in the gangrenous part being of leſs extent and the puſtule more raiſed.

In other writers we find an account of carbuncles in ſome reſpects differing from the foregoing. Samoilowitz, in his Account of the Plague of 1771 in Ruſſia, obſerves, that the petechiæ or maculæ are very large and confluent, and often turn to carbuncles a ſhort time before death, which happens in the following manner: two, three, or four large petechiæ run together and form a large puſtule; ſometimes a ſimilar puſtule ariſes on each petechia; in either caſe, on opening the puſtules a true carbuncle appears beneath. In the Traité de la Peste, it is obſerved of a plague which raged in the eastern parts of Europe, that purple ſpots appeared on various parts of the body, in the middle of which aroſe ſmall gangrenous tubercles

In the ſame publication, Geoffry takes notice of a carbun-

cle, no part of which assumed a black appearance. Dr. Russell, however, thinks that he describes its appearance at one period only.

Dr. Gotwald describes a carbuncle, appearing at first as a small swelling, on the surface of which there soon arose a number of little vesicles in clusters, which in a short time were formed into an eschar. These carbuncles were generally situated in membranous and tendinous parts, about the knee, behind the ears, upon the toes. &c. A streak of different colours has sometimes been observed proceeding from carbuncles on the fingers.

Dr. Hodges mentions an eruption of vesicles, which in one case he found covering the whole body. When the inflammation was considerable, they sometimes became gangrenous, and were changed into carbuncles; they then resembled Dr. Russell's third variety.

Eruptions now and then appear in the plague in some respects differing considerably from any of the carbuncles just described; in others resembling them. Gotwald, says Goodwin in his Historical Account) observed the papulæ ardentes or fire bladders in two patients only, both of whom recovered. They were as broad as a shilling, of an irregular shape, and the skin seemed as if it were shrivelled by fire; at length they emitted a small quantity of moisture, and vanished in a few days. They appeared on the belly, thighs and legs.

It would be tedious to enumerate all the eruptions of this kind which have been observed in different epidemics. The true pestilential carbuncle may be defined,

A pustular or vesicular eruption, sooner or later running to gangrene.

The eruption called anthrax, is nothing more than a carbuncle after it has sphacelated.

Carbuncles, to whatever variety they belong, for the moſt part do not exceed the ſize of a walnut; they have ſometimes been obſerved conſiderably larger. The time of their appearance is uncertain; they ſometimes ſhow themſelves on the firſt day, but more commonly not till a later period; and when ſeveral appear on the ſame perſon, they generally ſucceed each other rapidly. They have been known to come out as late as the eighteenth or twentieth day.

Reſpecting the number which appears on the ſame patient, Dr. Ruſſell obſerves, "Of thoſe of the firſt and ſecond ſpe-" cies ſeldom more than one or two were obſerved in the " ſame ſubject, in general one only. The other varieties oc-" curred in greater number, and including thoſe of the fifth, " I have ſometimes counted between twenty and thirty, but " this happens very rarely."

This eruption is always attended with conſiderable pain, which in ſome caſes is very violent. No external part of the body is exempted from carbuncles, "I have obſerved them " every where," the author juſt quoted remarks, "the penis " and ſcrotum not excepted, but never obſerved them on the " tongue, the tonſils, and internal parts of the mouth," (there have been inſtances, however, of their appearing on the tongue) "though in carbuncles on the cheek, near the corner " of the mouth the gangrene ſpreads inwards, and in one in-" ſtance of a carbuncle on the eye-brow, the gangrene ſpread-" ing upon the globe of the eye had deſtroyed part of it."

Carbuncles were regarded by the Ruſſian phyſicians, Dr. Guthrie informs us, as a ſign of greater malignity than buboes. They thought the carbuncle indicated leſs danger when red than when livid; when it ſuppurated than when it did not. When the hands and feet were the ſeat of carbuncles, Dr. Guthrie obſerves, the patient ſeldom or never recovered. Car-

buncles on the ſpine were alſo regarded as particularly unfavourable.

It is remarked, in the Traité de la Peſte, that in thoſe caſes in which little or no eruption appeared, and in which the patients died on the fourth or fifth day, ſome of the viſcera were generally found much diſeaſed, the inteſtines, chiefly the ſmall inteſtines, the meſentery, the liver, the internal parts of the ſtomach or the lungs, being eroded, or having large puſtules or gangrenous ſpots formed on them.

Carbuncles and buboes often appear ſeparately; they are alſo frequently combined, and in the latter caſe, it has been remarked, that the carbuncles moſt frequently appear on the ſame ſide of the body with the buboes. This, however, is far from being univerſally the caſe. The carbuncle ſometimes comes out very near the bubo, and ſometimes, though rarely, upon it.*

Carbuncles now and then give riſe to buboes, for it frequently happens that when the former appear on the arm, the glands of the axilla ſwell; theſe have been obſerved to be leſs painful than primary buboes, and they diſperſe when the carbuncles come to a favourable ſuppuration; which is not the caſe with primary buboes. Theſe lymphatic buboes, as they have been termed, are alſo obſerved, but much more rarely, in the groin, when the carbuncles appear on the thighs, legs, or feet.

The foregoing are the eruptions which diſtinguiſh the plague. There are ſome others, however, which occaſionally attend this diſeaſe.

3. Of the other Peſtilential Eruptions.

Common boils or furuncles, as they have been called, appear more rarely than buboes or carbuncles. They are

* Dr. Guthrie's observations on the Plague of Russia.

protruded ſuddenly, and are very much like the puſtule which precedes ſome kinds of carbuncles, but conſiderably larger. They ſoon riſe to a point, ſuppurate, and diſcharge good matter.

From what has been ſaid of petechiæ, it will not ſeem ſurpriſing that they ſhould attend a fever, of which, debility, we ſhall find, is one of the moſt ſtriking features. They are not, however, a conſtant attendant. In ſome epidemics they have been rarely obſerved. It is chiefly this eruption which has been called tokens; by ſome, God's tokens; but theſe names have not been uſed in a very definite ſenſe.

The appearance of petechiæ in the plagne adds to the unfavourable prognoſis. By the Ruſſian phyſicians they were regarded as a very fatal ſymptom.

I need not ſay much of the different claſſes into which, from their different appearances, they have been divided. In ſome caſes they appear red, afterwards becoming brown, or even black; in others they are brown from the firſt, and become black ſooner. In ſome caſes they are few in number, and confined to the ſuperior parts of the body, in others they are more numerous, and appear on every part. They are ſometimes ſmall circular ſpots, at other times larger and of a more irregular ſhape. As in other fevers, the darker their colour the more danger they indicate. Eruptions very different from petechiæ are mentioned under this name by writers on the plague.*

As in other malignant fevers, petechiæ often run together, forming blotches of various ſize and figure. Sometimes blotches appear without petechiæ, properly ſo called, the ſkin being variegated with ſtains of different colours, which have been compared to the clouds and ſtains in marble. In dif-

* Goodwin's Hiſtorical Account.

ferent places it is blue, yellow, red, brown, black, of various ſhades and brightneſs. "The ſkin," Dr. Ruſſell obſerves, "in various places was ſometimes deformed by narrow "ſtreaks of a reddiſh, purple, or livid colour. When ſuch "took poſſeſſion of the face they gave a frightful appearance "to the countenance, and frequently produced ſuch an alter-"ation of the features, and ſo completely diſguiſed the pa-"tient, as to render him hardly known by his acquaintance. "A ſtreak nearly of the ſame kind was ſometimes obſerved "darting from the edges of the buboes and carbuncles."

Very often the ſtains or blotches do not appear till after death, and then, particularly on the fleſhy parts, the body ſeems as if it had been bruiſed. "Sometimes," Dr. Ruſſell continues, "the whole ſkin of the thighs, back, and ſhoul-"ders, turned livid, while the corpſe was yet warm." Theſe appearances, he remarks, are not often obſerved at the commencement of the epidemic; which is to be regretted, as it is then that a characteriſtic mark of the plague is moſt wanted.

Such are the peſtilential eruptions. In Dr. Ruſſell's Treatiſe, the reader will find tables, giving the proportional frequency of the different kinds of buboes and carbuncles. The following are the reſult.

Of 2700, 1841 had inguinal buboes, 569 axillary, 231 parotid, 74 ſpurious buboes, 490 carbuncles. From theſe tables it appears that buboes in the right groin were more frequent than in the left, 729 had the former, 589 the latter. In another inſtance, 61 the former, 130 the latter. Buboes were alſo rather more frequent in the right axilla, than in the left, though not in ſo great a portion; 184 had buboes in the right, 165 in the left, axilla. In another table, the numbers of thoſe who had them in the right and left axilla differed

only by one, and that was in favour of the left. Not above one in ten or twelve had buboes in both groins, or both axillæ.

The fourth table ſhews the number of caſes in which buboes in the parotids, carbuncles, or ſpurious buboes, were the ſole eruptions, compared with that in which they were combined with inguinal or axillary buboes.

Buboes in the parotids in 130 were unattended, in 110 were attended, by inguinal or axillary buboes.

Carbuncles were the only eruption in 85 caſes; they were combined with axillary or inguinal buboes, in 405.

Spurious buboes appeared alone in 37 caſes; they were combined with axillary or inguinal buboes, in the ſame number.

In 143, inguinal and axillary buboes were variouſly combined. In 602, there was a complication of various eruptions.

It is to be remembered, however, that theſe proportions are drawn only from one or two epidemics, and will not, perhaps, apply with much accuracy to others; they may ſerve upon the whole to give ſome idea of the comparative frequency of the different eruptions.

SECT. II.

Of the other Symptoms of the Plague.

THAT I may abridge the following account of the ſymptoms of the plague, and conſequently render it more diſtinct,

it may be obſerved, that all the ſymptoms, both of ſynocha and typhus occaſionally attend this fever. It is unneceſſary again to detail all of theſe, for which I refer the reader to the ſecond book; and ſhall here conſider at length, thoſe which characteriſe the plague, or appear in this diſeaſe under peculiar modifications. It has already been remarked, that in the ſeveral diviſions of the plague adopted by writers, many of the varieties are ill defined. They ſeem to be marked by accidental ſymptoms, and ſome of them by no particular ſymptom, but the general mildneſs or ſeverity of the diſeaſe. In the former caſe the diviſion can be of no uſe; in the latter it can admit of no preciſion. Beſides, moſt writers on the plague, ſpeaking from their own obſervation alone, deſcribe the diſeaſe as it appeared in one or two epidemics; and in almoſt all epidemics there are peculiarities. It is only by comparing many that we can form an account of the diſeaſe generally applicable.

On comparing different epidemics, we ſhall find, that whatever be true of other eruptions, buboes are ſalutary. They almoſt always mark a form of the diſeaſe leſs generally fatal, than that unattended by this eruption. "Thoſe periſhed," Dr. Ruſſell remarks, "ſometimes within the twenty-four "hours, ſometimes on the ſecond or third day; they had "neither buboes nor carbuncles, and it was very rare to find "ſuſpicious marks of infection on the dead bodies." In "another place he obſerves, "The total abſence of buboes in "thoſe wo died ſuddenly I have no doubt of." He alſo remarks, "That the plague, under a form of all others the "moſt deſtructive, exiſts without its characteriſtic eruptions, "or other external marks reckoned peſtilential, can admit of "no doubt." The Ruſſian phyſicians, Dr. Guthrie informs us, found the caſes attended with buboes leſs fatal than thoſe attended with carbuncles. Carbuncles and petechiæ, De

Mertens, in his Account of the Plague of Moſcow, obſerves, are not critical eruptions, they only denote a putrid condition of the humours, whence it follows, that in proportion as buboes are more common, and petechiæ and carbuncles more rare, the milder is the plague. Orrœus, in his Treatiſe on the ſame Plague, obſerves indeed, that buboes, often attended he moſt acute form of the diſeaſe; yet in another place he informs us, that there were no buboes in the worſt form, their germs only being ſometimes obſerved after death; and Samoilowitz,* in his account of this plague, in deſcribing the worſt form of the diſeaſe, notices petechiæ and carbuncles as frequent ſymptoms, but makes no mention of buboes.

Upon the whole then, the plague unattended by buboes, runs its courſe more rapidly, and is more generally fatal, than when accompanied by this eruption. The plague may therefore be divided into that which is, and that which is not, attended with buboes.† The firſt of theſe includes many varieties, from that in which the prognoſis is almoſt uniformly good, to a form of the diſeaſe little leſs fatal than that unattended by buboes.

The appearance of the buboes alſo affords the means of

* Memoire sur la Peste qui en 1771 ravagea l'Empire de Russie, surtout Moscow, par M. Samoilowitz.

† Some writers have divided the plague into three species; that attended with buboes, that attended with carbuncles, and that attended with petechiæ. It will appear, I think, from a very cursory view of the disease, that there is no room for such a division.

By some of the older writers we find plagues mentioned, in no case of which, it is said, any eruption appeared. This is said of a plague which raged in Europe in the 15th century. We have every reason, however, to believe, that these epidemics were not the true plague. That of the 15th century appears to have been of the same nature with the Sudor Anglicus.

ſubdiviſion, for it will be found, on comparing the accounts of different epidemics, that upon the whole the earlier the buboes appear, the milder is the diſeaſe: thus, for example, in the firſt claſs of Dr. Ruſſell's diviſion, which was the moſt fatal, buboes were very rare; in the ſecond, which was alſo very fatal, though leſs uniformly ſo, buboes appeared on the third day or later; in the third claſs, which was leſs fatal, they appeared earlier; in the fourth, which was ſtill milder, buboes generally appeared on the firſt day; in the fifth, which never proved fatal, they were among the firſt ſymptoms.

To the two foregoing forms of the diſeaſe, a third may be added; for the peſtilential eruptions towards the decline of the epidemic ſometimes appear without fever. This form is a mere local affection unattended by danger.

The moſt fatal form of the plague makes its attack in various ways, ſometimes merely with depreſſion of ſtrength, a ſenſe of weight in the head, confuſion of thought, giddineſs, dejection, and oppreſſion about the præcordia, often accompanied with a bitter taſte. * The patient is inclined to be ſilent, ſhews much anxiety in his countenance, but makes few complaints; the febrile ſymptoms are very moderate. The attendants ſuppoſe the patient a little indiſpoſed, but ſuſpect nothing alarming; yet ſuch patients often die within the firſt twenty-four hours, ſometimes on the ſecond day. †

In general, however, this form of the plague makes its

* The bitter taste the reader will find mentioned by different writers as characteristic of the plague. It is observed by some that a favourable change seldom happened while this symptom continued.

† See Russell's Treatise on the Plague, and Orrœus on the Plague of Moscow.

attack leſs deceitfully. In an epidemic deſcribed by Chenot, * and that of Marſeilles, † it appeared with violent and irregular ſhaking. Delirium is ſometimes the firſt ſymptom. At other times, a remarkable ſtate of the pulſe, which very ſuddenly becomes ſo weak that it can hardly be felt, frequent and intermitting, with much debility and langour, announces the diſeaſe. The proſtration of ſtrength is ſometimes ſo ſudden and great, that Mr. Smith, Dr. Guthrie ‡ informs us, ſaw men in apparent good health, on being infected by the plague, ſuddenly drop down as if ſhot. Sometimes the firſt ſymptoms are extreme horror and deſpair. In other caſes, the diſeaſe attacks with very ſlight chills, in a ſhort time followed by a burning heat; as ſoon as the heat commences, the patient complains of inſufferable head-ach and exceſſive thirſt. Sometimes, as in the plague of Ruſſia, deſcribed by Orrœus, he is ſuddenly ſeized with violent ſhivering ſucceeded by a hot fit, the ſhivering and hot fit alternating ſeveral times. The firſt ſymptom is ſometimes a violent beating of the temporal arteries, while the pulſe at the wriſt is ſmall and feeble. In this caſe the heat is generally moderate, but the head-ach intolerable. In the plague which raged at Lyons, in 1628, a burning heat in ſome of the viſcera, and a dull pain, or rather great heavineſs of the head were the firſt ſymptoms. It ſometimes comes on with violent palpitation, and ſtrong convulſive tremblings. The plague which raged in London, in 1665, often made its attack in this way.

As the diſeaſe advances, it aſſumes more of the appearance of the fevers we have been conſidering. The inflammatory

* Chenot de Peste.

† Traite de la Peste.

‡ Observations on the Plague of Russia.

ſymptoms generally run high for the firſt day or two; for the moſt part the plague aſſumes the form of typhus at an early period, and the patient ſoon becomes delirious or comatoſe.

The delirium is ſometimes of the furious kind, particularly, Orrœus obſerves, in thoſe of a robuſt and full habit, and in whom a full meal appeared to be the immediate exciting cauſe. In general, however, it is of that ſpecies which characteriſes typhus, the patient appearing rather ſtupid than outrageous, and complaining of a pain at the heart, a frequent ſymptom in the plague. When coma comes on early, it has been looked upou as affording a worſe prognoſis than delirium, particularly if it ſuffers no remiſſion in the day time. The remiſſion in the day time is generally more evident when the patient is delirious than when he is comatoſe.

Whether he become comatoſe or not, there is always a very remarkable muddy appearance of the eyes, which is sometimes obſervable at the very commencement, and is one of the moſt characteriſtic ſymptoms of the diſeaſe. This appearance of the eyes reſembles that in the laſt ſtage of malignant fevers. It is not, however, deſcribed as altogether ſuch, for with the muddineſs there is blended a degree of luſtre. It is an appearance very remarkable to thoſe who have ſeen it, but not eaſily conveyed in words. Chicoyneau ſays of it, "Les yeux etoient ternis, le regard fixe et egaré annoncoit la "terreur et le deſeſpoir."* Chenot calls it, "Oculorum "languor et mæſtitia;" in another place, "occuli triſtes ſcin-"tillantes," which laſt might almoſt be ſuppoſed a tranſlation of Dr. Ruſſell's account of it. The eyes, Orrœus obſerves, are unuſually prominent and preternaturally red, watery, and of a ſparkling fierceneſs, but in the advanced ſtage of the diſeaſe, they ſink, the redneſs goes off, and a little be-

* Traite de la Peste.

fore death, they appear dull and as if covered with a film. This change may be obſerved to a greater or leſs degree, during each remiſſion, for it is in the exacerbations that the peculiar appearance of the eyes is moſt remarkable.

Almoſt all writers on the plague take notice of an expreſſion of countenance, which to thoſe who are converſant with the diſeaſe, is one of its beſt diagnoſtics. It was the ſtate of the eyes, Dr. Ruſſell remarks, which contributed chiefly to occaſion that confuſion of countenance which he does not attempt to deſcribe, but from which, after repeatedly obſerving it, he could with ſome certainty pronounce whether the diſeaſe was the plague or not.

In the comatoſe, the muddineſs of the eyes is moſt remarkable. Their fierceneſs is moſt ſtriking in thoſe who labour under delirium, particularly the furious delirium; and it ſometimes happens, that the coma and delirium, with the peculiar caſts of countenance which accompany them, alternate with each other. In the delirious, however, there is ſtill an ap-appearance of muddineſs, and the eyes retain ſome luſtre in the comatoſe. Theſe appearances of the eyes are leſs remarkable in children than in adults. The danger is very generally proportioned to them. When the eyes reſume the natural appearance, particularly after ſweats, the prognoſis is favourable. In the form of the plague we are conſidering, this rarely happens.

The changes which take place in the eyes are not always confined to their appearance; the retina is ſometimes much affected. The patient complains of ſeeing ſparks, flaſhes of fire, and various colours paſſing before the eyes; this is only a greater degree of the ſymptom termed muſcæ volitantes. Deceptions of ſight, however, are not frequent ſymptoms in the plague. Deceptions of hearing are ſtill more rare. Deafneſs, as in other fevers, is a favourable ſymptom, but it ſeldom

attends this diſeaſe. With reſpect to the other ſenſes, nothing particular is to be obſerved. The depravation of taſte, which is in ſome meaſure characteriſtic of the plague, I have already had occaſion to notice.

The anxiety in many caſes is extreme, the patient conſtantly changing his poſture, and ſoon finding the preſent as uneaſy as the laſt, ſo that he is ſometimes perpetually in motion. When this ſymptom is conſiderable, it affords a very unfavourable prognoſis. The appearance it aſſumes when at its height, which generally indicates the approach of death, is deſcribed by authors, who have termed it a mortal inquietude, in very ſtrong terms. The patient inceſſantly twiſts his body as if in agony, but is incapable of giving any account of his feelings, ſo that it is difficult to determine whether it is occaſioned by a great degree of anxiety or ſevere pain.

The temperature is ſometimes, but not often, very high. While the chills continue to recur, its increaſe is not conſiderable, and in the caſes where it is moſt ſo, it ſeldom equals that which we often meet with in common ſynocha.

The ſtate of the pulſe varies. In moſt caſes after the firſt days, in many after the firſt hours, and in ſome from the commencement, it is feeble and frequent. Sometimes it is remarkably hard and ſmall but regular, at other times it is irregular or intermitting, and at length fluttering.

During the exacerbations at an early period, it often becomes full, open and ſtrong, as Dr. Ruſſell expreſſes it; after which it again ſinks; in the more advanced ſtage, the oppoſite change is obſerved, the pulſe during the exacerbations, becoming ſo feeble that it can with difficulty be felt. It has been obſerved that though to a ſlight touch the pulſe is ſtrong and full, it is often eaſily compreſſed.* It is very remarkable,

* In the Traité de la Peste the reader will find this state of the pulse mentioned both by Chicoyneau and Conzier. "Il etoit ouvert et

that it has often been obſerved nearly natural while the other ſymptoms indicated much danger.

The increaſe of debility is generally indicated by a conſiderable affection of the ſpeech; in ſome caſes there is only a degree of confuſion and faltering, or a change of tone; in others the voice is greatly impaired or loſt. When the debility is exceſſive from the beginning, when, as Chenot obſerves, "Ægri erecti ſtare aut ſedere impotes, proprio pon-" dere labebantur," a conſiderable affection of the ſpeech is generally obſerved on the firſt night, or the ſecond at fartheſt.

The tongue often retains the natural appearance throughout the greater part of the diſeaſe. Sometimes it is moiſt, and covered with thick mucus, at other times dry. "Sometimes," Dr. Ruſſell obſerves, "it became parched with a yellow "ſtreak on each ſide, and reddiſh in the middle, but it never "was obſerved to form ſo thick a fur or become of ſo dark "a colour as in the advanced ſtages of ſome other fevers. "The dryneſs or moiſtneſs of the tongue," he adds, "rarely "correſponded with the febrile ſymptoms, for the tongue "was often moiſt where the external heat was intenſe and "the pulſe indicated high fever; and on the contrary, parch-"ed where the fever in appearance was very inconſider-"able."

Vomiting, though more frequently obſerved in leſs violent forms of the plague, ſometimes attends this variety. The pain at the heart, ſo frequently complained of, Dr. Ruſſell thinks ſituated about the orifice of the ſtomach. As it often accompanies vomiting, he was at firſt led to believe that it aroſe from bile or other irritating matter in the ſtomach. He found, however, that it was not relieved by the diſcharge. It

"animé." The former obſerves, "Il diſparoiſoit cependant ſi on "pressoit l'artere avec le doigt."

ſeems more than propable, from the nature of the ſymptoms, that this pain proceeds from an inflammatory affection of the ſtomach.

The matter evacuated by vomiting is generally bilious. It is ſometimes of a dark colour and mixed with blood; and it is not uncommon for worms to be thrown out by vomiting. They muſt of courſe have exiſted before the attack of the diſeaſe by which they were expelled. Whatever be the appearance of the matter rejected, when vomiting occurs at an early period and returns at intervals, the prognoſis is bad.

Nauſea without vomiting is a frequent ſymptom. It does not ſeem to proceed from irritating matter in the ſtomach, as repeated emetics are not found to relieve it. There are few means more effectual in allaying nauſea and vomiting than thoſe which promote perſpiration. It has been obſerved of the plague, that if the repeated reaching occaſions a moiſture on the ſkin, the nauſea abates.

A diarrhœa frequently ſupervenes, ſometimes during the firſt days, more frequently at a later period. This is invariably a dangerous ſymptom. The matter paſſed by ſtool is ſimilar to that rejected by vomiting, often bilious, frequently with an evident admixture of blood; ſometimes blood only is paſſed. Chenot often met with dyſenteric purging in the plague.

As there are few fevers in which purging is ſo unfavourable, ſo there are none in which conſtipation appears to be leſs injurious. "A number of the ſick," Dr. Ruſſell obſerves, "were diſpoſed to be coſtive throughout the diſeaſe, "and ſome had no ſtool for ſeveral days, the popular dread "of provoking a diarrhœa proving a bar to laxatives and even "to ſimple clyſters, which are readily admitted at other times. "The conſequences of this ſluggiſhneſs of the bowels were "by no means what might have been expected, for on com-

" paring a number of cafes in which the body had been all
" along regular, with others in which there had been no ftool,
" the former did not appear to have been particularly exempt
" from thofe fymptoms which might plaufibly have been im-
" puted to coftivenefs in others."

The urine is often obferved in no refpect different from that of a perfon in health; at other times it is pale, high-coloured, frothy, turbid, or depofits a great deal of fediment, and is fometimes more or lefs tinged with blood; in fhort, it affumes in different patients, or fometimes in the fame at different times, all the various appearances obferved in other fevers.

There is no excretion of fuch confequence in the plague as that by the fkin. When it remains parched, or when only flight, clammy, partial fweats appear, the prognofis is bad; when on the other hand a thin, general, and copious fweat takes place, it often proves more or lefs critical.

Dr. Ruffell remarks, that the breath and perfpiration were feldom or never fetid. Other writers, however, have obferved that they are often fo to a great degree.

Slight convulfive motions of the limbs and fubfultus tendinum are frequent; hiccup rarely, and fneezing almoft never, attends the plague.

Hemorrhagies are a common fymptom, and unlefs very moderate, generally indicate danger. They are not uncommon, as appears from what has been faid, from the ftomach, inteftines, and kidneys. They are moft frequent, however, from the nofe, and in women from the uterus. Thefe, particularly the hemorrhagy from the nofe, when they occur early in the difeafe, and the patient is young and plethoric, fometimes bring relief. At a later period, hemorrhagies are always unfavourable, and when they become profufe the patient rarely furvives. It has been remarked, as might have been in-

ferred a priori, that the blood which flows in thefe hemorrhagies is thinner in proportion as the difeafe is further advanced.

Such are the fymptoms of the worft form of the plague. The ftrength gradually finks, till the pulfe impreffes the finger with only a weak, undulating, or tremulous motion, with frequent intermiffions. The furface, particularly on the extremities, becomes cold and covered with clammy moifture, the pulfe cannot be felt, and the patient calmly expires, or, as fometimes happens in all idiopathic fevers, is carried off by convulfions.

The fecond and more common form of the plague, that accompanied with buboes, includes endlefs varieties.* What I am about to fay of this form, may be divided into two parts; the circumftances in which it differs from the preceding form, and thofe in which its principal varieties differ from each other.

In the firft place, of the circumftances in which this form differs from the preceding. If we except the appearance of buboes, we fhall find no fymptom conftantly attending the one, and never prefent in the other. There are certain fymptoms, however, more frequent in the one than the other.

Both vomiting and diarrhœa are moft frequent in cafes where buboes are about to appear. They fometimes attend from the commencement; at other times fupervene at a later period. When the vomiting and purging commence early, they often continue to harafs the patient through a great part of the difeafe.

* Some objection might be stated to regarding the plagne as an exanthema. Were it not that it arises from a peculiar contagion, it ought rather to be ranked as a species of synochus.

Although the delirium and coma are ſomtimes as uniform in this, as in the preceding form, it is not generally ſo. In moſt inſtances, indeed, ſome degree of theſe affections comes on in the evening and continues through the night, but in the majority of caſes, unleſs the diſeaſe is far advanced, the patient during the day is nearly and ſometimes altogether free from them. An epileptic fit now and then, very rarely, precedes the eruption, a ſymptom hardly ever obſerved, in the form of the diſeaſe we have been conſidering. The ſudden depreſſion of ſtrength is upon the whole leſs remarkable, and the pulſe for the moſt part continues longer full, and is leſs apt to become irregular. The duration of the diſeaſe upon the whole is longer, petechiæ and vibices are more common, and the body more frequently becomes livid and black after death.

The great difference between the general courſe of the ſymptoms in the firſt and ſecond forms of the plague, is, that in the latter, they are upon the whole leſs alarming and more protracted, the patient often labouring under various ſymptoms for ſome days before the fever is formed.* In the danger and rapidity of the ſecond form, however, there is great variety; it varies from a degree of ſeverity nearly equal to that of the firſt, to a degree of benignity approaching to that of the laſt, in which the eruptions are unaccompanied by fever.

Although the varieties of the ſecond form are in reality endleſs, there are only three which can be diſtinctly marked, for (notwithſtanding the numerous diviſions of authors) I can diſcover no ſymptom which characterizes any varieties included under theſe; and varieties ill characterized, inſtead of conducing to perſpicuity, tend to perplex by holding fourth diſ-

* See what Orrœus calls the period of infection, in his Account of the Plague of Russia.

tinctions which, the reader ſoon perceives, nature has not made. Surely vomiting occurring more or leſs frequently, or coma ſupervening at an earlier or later period, is not ſufficient to characteriſe different varieties of the plague, unleſs it can be ſhewn that the general courſe of the diſeaſe is materially influenced by the abſence or delayed appearance of ſuch ſymptoms, which on peruſing the account of different epidemics we do not find to be the caſe.

The firſt variety of the ſecond form, according to the diviſion I have adopted, is characterized by the buboes not appearing till the ſecond or third day, or later. In this caſe the ſymptoms are generally more violent, and the prognoſis worſe than when they appear on the firſt day, which characterizes the ſecond variety of this form; in the third, the eruption of buboes is among the firſt ſymptoms, in which caſe the febrile ſymptoms are for the moſt part ſtill milder.

Many caſes of the firſt of theſe varieties ſo much reſemble ſome of the firſt form of the diſeaſe, that the difference conſiſts almoſt ſolely in the appearance of buboes in the former; thus the firſt and ſecond forms of the plague imperceptibly run into each other.

The pulſe generally continues pretty full and tolerably ſtrong till the ſecond day, during which, for the moſt part, it becomes weak, and ſometimes intermitting. The peculiar dejection of countenance, with the muddineſs of the eyes, which come on more early in the very worſt caſes, frequently ſupervene at this time. If they are accompanied with irregular fluſhing, a ſenſe of internal heat, pain about the præcordia, and inceſſant inquietude, the danger is extreme; as in the firſt form, theſe ſymptoms often precede that diminution of temperature and cold dampneſs of the ſurface, that announce the patient's death to be inevitable, which is often, however, at the diſtance of a day or two, or more. After

this, although the heat of the body returns, the ſymptoms upon the whole gradually become worſe. When the ſtrength has not been greatly reduced by the vomiting and purging, a remiſſion is often obſerved on the third day, but if the foregoing train of ſymptoms has previouſly occurred it is always fallacious, and the diſeaſe returns with increaſed violence. The patient often ſurvives to the fifth or ſixth day or later, the remiſſions conſtantly becoming ſlighter, and the exacerbations more ſevere.

On the ſecond or third day, ſometimes later, buboes make their appearance, in general without bringing relief; carbuncles alſo frequently ſupervene with no better effect. This, however, is not uniformly the caſe; Chenot obſerves, that the eruption of buboes and carbuncles was often attended with an evident remiſſion. In ſome epidemics, Waldſhmidt * remarks, when the ſymptoms were moſt alarming, the appearance of buboes often ſaved the patient, but in others they were not attended with any advantage.

In this variety the body is frequently covered with petechiæ or vibices, and the corpſe often becomes black.

The malignant train of ſymptoms juſt mentioned as appearing on the ſecond day, ſometimes do not ſupervene till a later period. At whatever time they occur, however, they almoſt always afford a fatal prognoſis. In ſome favourable inſtances, eſpecially where the vomiting and purging do not occur, or at leaſt not in ſuch a degree as greatly to reduce the ſtrength, the foregoing train of ſymptoms does not appear, and the patient eſcapes. In theſe caſes, the delirium or coma ſeldom comes on before the ſecond night, and the remiſſions which take place in the morning are more conſiderable. Such flattering appearances, however, often prove deceitful, and

* See Haller's Disput. ad Hist. et Cur. Morb. pert. vol. 5.

even a ſalutary ſweat on the morning of the third day is ſometimes ſucceeded by a fatal train of ſymptoms.

The fatal termination frequently happens on the fifth day, ſometimes not till the ſixth, ſeventh, or eighth, and then the ſymptoms are generally milder, and the buboes appear early on the ſecond day. Few recover from this variety.

In the ſecond variety of the ſecond form of the plague, according to the diviſion I have adopted, buboes appear on the firſt day. Here the ſymptoms are wonderfully varied. Many caſes are equally fatal with thoſe which have been conſidered, but this variety upon the whole is leſs ſo. *

Dr. Ruſſel obſerves of his fourth claſs, which correſponds to this variety, "The fourth claſs was the moſt numerous of "all, comprehending thoſe forms of the diſeaſe, which, "from the various and ſudden changes in their courſe, ſo "often, though not conſtantly, met with, cannot eaſily be "repreſented in conciſe and connected deſcription; I there-"fore enter on the attempt with diffidence, and as a ſupple-"ment for defects, muſt refer to the caſes themſelves noted "below. The diſtinctive marks of this claſs are, the con-"tinuance of the inflammatory and febrile ſymptoms with "leſs interruption than in the former; a pulſe more con-"ſtantly ſuſtained or ſoon recovering itſelf when ſunk and "hurried in the exacerbations; the length and rigour of the "exacerbations decreaſing in the advance of the diſeaſe; and "above all, the prevalent tendency to a favourable criſis by "the ſkin, with the critical ſweats on the third, fifth, or "ſubſequent days."

Vomiting is not ſo frequent a ſymptom in this, as in the former variety. The ſymptoms upon the whole, however, are ſometimes as ſevere as in that variety; but for the moſt part

* See the observations of M. Chicoyneau, in the Traite de la Peste

they are milder. The fever is more moderate; and delirium or coma ſtill more rarely appears on the firſt night, during which the patient is leſs reſtleſs and anxious.

The remiſſion on the ſecond morning is generally conſiderable, and during the ſecond day the ſymptoms undergo many changes; at one time running high, often with more or leſs coma, ſoon afterwards ſuffering an evident remiſſion, which in many caſes is only a prelude to a new exacerbation.

The exacerbations are ſometimes followed by a ſweat, more or leſs general, on the morning of the third day, which is found in proportion as it is general to bring relief. The moſt general ſweats commonly occur in the morning, and conſequently the moſt evident remiſſions. At other times the ſweats for the moſt part are partial, and the patient during the remiſſions, anxious and oppreſſed. The morning ſweat of the third day often proves completely critical, or brings ſuch relief that the patient remains free from danger.

This remiſſion however is frequently inconſiderable, and the exacerbation ſoon returns. If during this there be an evident change in the ſtate of the pulſe, if from having been pretty full and ſtrong it become weak and fluttering, the prognoſis is bad. After this, the pulſe varies in frequency, but ſeldom recovers its ſtrength.

When the change in the pulſe is leſs remarkable, however, the ſweat which returns on the morning of the fourth day again brings relief, and if the exacerbation on this day be leſs, the ſweating is more profuſe and brings more relief on the fifth, and a third profuſe ſweat on the morning of the ſeventh day often completes or nearly completes the recovery. It has been remarked, that the ſweats in this claſs of patients are

more profuſe and bring more relief on the mornings of the odd, than on thoſe of the even, days.*

All who eſcape, however, do not recover in this way, but often very ſlowly, and with little or no ſweat.

In the laſt variety of the ſecond form of the plague, namely, where the eruption of buboes is among the firſt ſymptoms, many caſes are attended with a conſiderable degree of fever, ſometimes protracted for ſix or eight days; but comparatively few are attended with much danger.

Chenot gives the following ſhort account of his firſt diviſion of the plague, which nearly correſponds with this variety, "Subinde vix ulla bubonis ortum præcedit ſtipatve ægritudo. "Ipſe carbunculus nonnunquam prodit, prævia tantum miti "commotione febrili, manifeſtior tamen plerumque eſt quam "in bubone."

The patient is ſometimes not even confined to the houſe, and very often not to bed. In ſhort, the mildeſt caſes of this variety almoſt reſemble the laſt form of the plague, in which the eruptions are the only ſymptoms.

Such are the ſymptoms of the plague, and the gradations by which the firſt form runs imperceptibly into the laſt, than which it is impoſſible to conceive two diſeaſes more diſſimilar.

Before leaving this part of the ſubject it is neceſſary to obſerve, that although moſt caſes of the plague will be found referable to ſome of the foregoing heads, there are many anomalous caſes which cannot be arranged under any one deſcription, as they differ from each other, as well as from all other caſes. Dr. Ruſſell forms a ſeparate claſs for ſuch anomalous caſes, without, however, attempting any general account of them; all he obſerves is, "This claſs being reſerved

* See what is said in the first book of the Doctrine of critical days.

" for ſuch caſes as were dubious, anomalous, or extraordinary, " varying more or leſs in ſome material circumſtances from " any of the foregoing claſſes, admits of courſe of no general " deſcription. The particular caſes, to which have ſome- " times been ſubjoined occaſional remarks, may be conſulted " agreeably to the references made below to the journals."

An account of ſuch caſes would not only be tedious but of little uſe, ſince the anomalous caſes of one epidemic are not always found to reſemble thoſe of another. All that can be done, is to warn the practitioner that anomalous appearances are to be looked for, which do not ſeem, however, materially to influence the mode of treatment.

SECT. III.

Of the Cauſes of the Plague.

THE hiſtory of the plague is involved iu much obſcurity. It is impoſſible to ſay from what ſource, or where, it originated. The earlieſt plagues of which we have any account raged in Egypt and other parts of Africa.*

* See Waldshmidt's Treatise on the Plague, in the fifth volume of Haller's Disput. ad Morb. Hist. et Curat. pert.

We are ſufficiently acquainted with its hiſtory, however, to be aſſured, that it ariſes from a peculiar contagion. Profeſſor Stoll of Vienna, indeed, and ſome others, have combated this opinion, but it would be miſpending time to trouble the reader either with the arguments of theſe writers, or any refutation of them, as they have ſcarcely now a ſingle advocate. *

The ſubject of contagion has already been conſidered at length. It is needleſs to repeat what has been ſaid of the means of preventing the generation and checking the progreſs of contagious diſeaſes; † and it would be tedious here to deſcribe lazarettos and the various precautions employed to prevent the introduction of the plague; for theſe I ſhall refer the reader to the works of Mr. Howard and Dr. Ruſſell.

The contagion of the plague, like that of other diſeaſes, is active only for a very ſhort diſtance around the patient.

Some facts would lead us to ſuppoſe that peculiar ſtates of the air are favourable to the production of the plague. It has ſometimes appeared in many parts of a country at the ſame time. ‡ More generally, however, it appears at firſt in one place only, and gradually ſpreads to others.

* See the Traité de la Peste, and Dr. Russell's work on the Plague.

† De Mertens recommends, as a good preventive, wearing a cloak of oiled cloth over the clothes, while in the rooms of the sick. It has also been recommended to anoint the body with oil. De Mertens thinks issues not to be depended on. The reader will find, in his Treatise on the Plague of Moscow, formulæ for what have been termed antipestilential powders; they are similar to the fumigating powders mentioned above, in speaking of the purification of fomites; the manner of using them also, is there pointed out.

‡ See a Letter by the Rev. Mr. Dawes from Aleppo, in the third volume of the Medical Museum.

As in other contagious fevers, warm weather is generally favourable, and cold weather unfavourable, to its progreſs. The plague was greatly weakened, De Mertens informs us, while the thermometer ſtood between ſixteen and twenty degrees below froſt. It often happens, however, that its violence is not checked by the winter, and there are many inſtances of the plague ceaſing in the warmeſt ſeaſons of the year. All the plagues with which Aleppo has been viſited during this century, the Rev. Mr. Dawes obſerves, are ſaid to have regularly ceaſed in Auguſt or September.

The young and robuſt, it has been obſerved, are more liable to infection than the old and infirm. It has often been remarked of the plague, as of moſt other contagious fevers, that infants are leſs liable to it than adults. Waldſhmidt ſaw ſeveral infants who ſucked nurſes ill of the plague, and yet eſcaped infection. He even obſerves, that one infant ſucked two nurſes ill of the plague, both of whom died, yet the child did not receive the diſeaſe. A woman who ſuckled her child five months old, was ſeized with the plague and died after a week's illneſs, but the child who ſucked her and lay in the ſame bed with her, eſcaped the diſtemper. De Mertens and others make ſimilar obſervations. It is remarkable, however, that the fœtus in utero ſometimes receives the diſeaſe, and that even where the mother eſcapes.*

It has been obſerved of ſome of the exanthemata† that cer-

* "Last year as well as this, says Dr. Dawes, there has been more "than one instance of a woman's being delivered of an infected child "with the plague sores on its body, though the mother herself has "been entirely free from the distemper." In pregnant women the plague generally produces abortion.

† This has often been remarked of the small-pox and measles. Respecting the latter Dr. Willan doubts the accuracy of the observation.

tain conſtitutions are not liable to them. This ſeems to be true of the plague. Waldſhmidt knew a woman who was ſervant in a family where ſeven people died of the plague, and afterwards in another all of whom died of it, and yet remained uninfected. A Greek lad, Mr. Dawes obſerves, made it his buſineſs for many months to wait on the ſick, and to waſh, dreſs, and bury the dead, yet eſcaped the diſeaſe.

Thoſe who have once had the plague are leſs ſubject to it than others. This circumſtance, together with the ſucceſs which had attended inoculation for the ſmall-pox, induced ſome to recommend inoculating for the plague, which has actually been done. In Dr. Guthrie's Letter to Dr. Duncan there is an account of a ſurgeon, Mathias Degio, who inoculated himſelf for the plague. He inſerted, with a lancet, under the cuticle of the arm, a little of the matter from a peſtilential abſceſs. On the fourth day after inoculation the fever appeared; he treated himſelf in all reſpects in the ſame way as if he had been inoculated for the ſmall-pox, paying particular attention to the cool regimen. His only medicines were cold water and vinegar, with a little wine. The diſeaſe proved ſo mild that he was never confined to bed, but was generally in the open air. It was not more ſevere than the common inoculated ſmall-pox.

He afterwards regularly attended an hoſpital allotted for the reception of patients under the plague, without ſuffering from the diſeaſe; while moſt of the other ſurgeons fell a ſacrifice to it. From one caſe, however, no concluſion can be drawn; beſides, it is far from being uncommon for the plague to attack the ſame perſon a ſecond or third time.

It appears from the foregoing caſe, that the contagion of plage produces the diſeaſe about four days after infection. De Mertens alſo obſerves, that the attendants on the ſick generally fell ill about the fourth or fifth day, and Dr. Guthrie relates

a caſe in which the patient ſickened on the fourth day. Sometimes, however, its effects are more ſudden. Waldſhmidt mentions the caſe of a perſon, who while he was drying ſome clothes which had been worn by a patient under the plague, was immediately ſeized with nauſea and head-ach, and died on the ſixth day, a bubo and other peſtilential ſymptoms having made their appearance.

Brutes are incapable of receiving this diſeaſe, although like other things which have been in contact with or near the ſick, they are often the means of conveying the contagion. It appears, however, from an inſtance related by Boccacio, and ſome ſimilar ones mentioned by Waldſhmidt, that the contagion of the plague, if received into the ſtomach often produces violent effects on brutes; a circumſtance which affords a ſtrong argument againſt contagion, in caſual infection, making its firſt attack on the ſtomach.

The contagion of the plague, like that of typhus, appears ſometimes to act merely as a prediſpoſing cauſe. In ſpeaking of the latter, it was remarked, that the obſervations of Dr. Lind have proved, that the contagion of typhus may ſometimes lurk in the body and remain inactive for a conſiderable length of time, if the patient is not expoſed to other cauſes of diſeaſe, which ſeem to prepare the ſyſtem for its action. De Mertens makes a ſimilar obſervation with reſpect to the plague; many, he obſerves, were ſuddenly ſeized after a hearty meal, a fit of anger, or violent exerciſe.

It is of great importance to determine how long the contagion of plague will lurk in the human body, or in fomites while freely expoſed to the air, and retain its activity, as this circumſtance determines the duration of quarantine. Dr. Cullen thinks forty days longer than neceſſary for the quarantine of people; and that if goods are properly unpacked and aired, the term of their quarantine may alſo be ſhortened.

"I ſuggeſted," Dr. Guthrie obſerves in his Letter to Dr. Duncan, "to Baron Aſh, phyſician general to the Ruſſian "army, a doubt of the poſſibility that the very active conta- "gion of the plague could remain ſo long latent in the body, "as the quarantine of perſons ſeems to imply, and that it ap- "peared to me to be founded on an imperfect knowledge of "the diſeaſe, drawn from a period of ignorance or of general "conſternation and terror. His anſwer was, that he did not "think that the contagious nature of this violent diſeaſe could "remain longer in the body than fourteen days without de- "claring itſelf on, or before, that period, but that from his "own obſervation and experience he could not take it upon "him to ſay that it could not be concealed ſo long. Such "were likewiſe the anſwers I received from the other medi- "cal gentlemen whom I conſulted on the ſubject. Some gave "a little more latitude and ſome leſs, as it can only be a mat- "ter of opinion, but none exceeded fourteen days."

From different facts, juſt ſtated, it would ſeem that the plague generally appears as early as the fourth or fifth day after infection; but we do not know how long a perſon who has laboured under the diſeaſe is capable of infecting others, nor how long the contagion may lurk in an unfavourable habit without producing the diſeaſe, and be communicated and excite the diſeaſe in habits more ſuſceptible of infection. Upon the whole we have reaſon to believe, that a quarantine of forty days is conſiderably longer than neceſſary. Experience, however, has not yet aſcertained how much this term may be ſhortened.

The moſt unaccountable circumſtance reſpecting the contagion of the plague, which has alſo indeed been obſerved to a greater or leſs extent of that of other fevers, is, that it often ſuddenly and without any apparent cauſe ceaſes to produce the diſeaſe. The plague, ſays De Mertens, ceaſed at one time

over the whole Ruſſian empire, after having prevailed at Moscow and other places for a year and a half. "But a "greater difficulty," Dr. Ruſſell obſerves, "than that of all "perſons not being ſuſceptible of infection, ariſes from the "ceſſation of the plague at a period when the ſuppoſed con-"tagious effluvia preſerved in apparel, furniture, and other "fomites, at the end of a peſtilential ſeaſon, muſt be allowed "not only to exiſt in a much greater quantity than can be ſup-"poſed to be at once accidently imported by commerce, but "in a ſtate alſo of univerſal diſperſion over the city. The "fact, however unaccountable, is unqueſtionably certain, the "diſeaſe ſeems to be extinguiſhed by ſome cauſe or cauſes "equally unknown as thoſe which concurred to render it more "or leſs epidemical in its advance and at its height. In "Europe ſomething may be aſcribed to the means employed "for the cleanſing of houſes and goods ſuppoſed liable to re-"tain the latent ſeeds of infection. But at Aleppo, where "the diſtemper is left to take its natural courſe, and few or "no means of purification are employed, it purſues nearly "the ſame progreſs in different years. It declines and re-"vives in certain ſeaſons, and at length, without the inter-"ference of human aid, ceaſes entirely." "Ubi peſtis non-"dum penitus extincta fuit," ſays Waldſhmidt, "hæc ſua "ſponte præter omnium expectationem ita ceſſavit, ut ne veſ-"tigium quidem ejus poſtea apparuerit." Nor was any one infected by another, he adds, although the latter ſtill had the peſtilential buboes about him, while articles which had been in contact with the ſick entirely loſt the power of communicating the diſeaſe.

At the beginning of the epidemic, the plague generally aſſumes the firſt form according to the arrangement I have followed, ſo that it appears without its peculiar eruptions. It is alſo then leſs contagious than at the height of the epidemic;

two circumſtances which often lead to fatal errors. During its progreſs it inclines more and more to the laſt form, in which it generally terminates.

It is remarkable that convaleſcents from the plague have the venereal appetite unuſually ſtrong, a circumſtance which often counteracts the endeavours of the magiſtrate, and tends to ſpread the diſtemper. The ſame thing has been obſerved reſpecting other malignant fevers. It is particularly remarked by Dr. Ruſh of the late fever of North America.

SECT. IV.

Of the Treatment of the Plague.

"In the cure of the plague," Dr. Cullen juſtly remarks, "the indications are the ſame as thoſe of fever in general." I therefore refer the reader to what was ſaid of the treatment of continued fever, and ſhall now only make a few additional remarks particularly applicable to this diſeaſe.

The Aſiatics employ blood-letting in all caſes of the plague, and even recommend it as late as the fourth, fifth, ſixth, or ſeventh day, and ſome European phyſicians have uſed it with great freedom.*

* It is a remark of Sydenham that blood should be let if the physician see the patient before any appearance of a bubo. The reader may consult on this subject Dr. Alexander Russell's account of the plague in his Natural History of Aleppo.

The reader will find many declaring that they could not perceive that a ſmall blood-letting, particularly at the commencement did harm. They appear to have aſſumed it as an axiom, that if blood-letting is not evidently hurtful, it muſt be beneficial in this diſeaſe; and all that they ſeem anxious about is to adduce caſes and arguments in ſupport of its innocence.

Nothing can be more fallacious, however, than the arguments employed for this purpoſe, as the reader will readily perceive, when he reflects that the conſequences to be dreaded from blood-letting in the plague, the various ſymptoms indicating a general loſs of tone, occur in all the more alarming caſes of this diſeaſe, and ſupervene at different periods. How then ſhall we aſcertain that blood-letting has not accelerated, or even occaſioned, their appearance?

"Upon finding the pulſe ſink ſo ſuddenly after bleeding," an author I have frequently had occaſion to mention obſerves, "I was at firſt inclined to attribute it to that evacuation, and "to ſuſpect in leſs plethoric habits bleeding muſt prove ſtill "more prejudicial; but I afterwards found the low ſtate in-"ſeparable from certain forms of the diſeaſe, and often could "obſerves no material difference in its progreſs in caſes where "blood-letting had or had not been omitted." The author in this quotation confeſſes that the ſymptoms of debility were thoſe which he dreaded, and alſo thoſe to be feared from the means he employed, without informing us of any advantage to be expected from it, to counterbalance the riſk.

Others run to the oppoſite but ſafer extreme, and maintain that blood-letting is univerſally hurtful in the plague.

The more we ſtudy the obſervarions of the original writers, we ſhall, I think, find the more reaſon to believe, that the employment of blood-letting in this diſeaſe is to be regulated by the ſame maxims as in other idiopathic fevers.

Many of the Turks employ local inſtead of general blood-letting, and in the latter they uſually draw much leſs blood than we are accuſtomed to do; circumſtances which have probably contributed much to eſtabliſh the ſafety of blood-letting in the plague.

An opinion has prevailed, as reſpecting the other exanthemata, that blood-letting is apt to repel the eruption, which it is feared might be attended with bad conſequences. Dr. Ruſſell thought that in one caſe it had this effect. Direct experience is not ſufficiently extenſive and accurate to determine the queſtion, whether blood-letting, if otherwiſe indicated, ſhould be delayed when an eruption is expected; if we admit of reaſoning from analogy, it may without heſitation be anſwered in the negative.

We are led by analogy to believe that emetics may be uſeful at the commencement of the plague, and they have ſometimes been employed with advantage. "Vomiting," Dr. Alexander Ruſſell * obſerves, "was alſo of the utmoſt "conſequence at the beginning." "The mode of treat-"ment," ſays Dr. Guthrie, "which the Ruſſian phyſicians "found the moſt ſucceſsful in the plague was, beginning "with a vomit on the appearance of the firſt ſymptoms, and "working it off with acid drinks. If the nauſea and bitter "taſte in the mouth were not relieved by the firſt, they gave a "ſecond and ſometimes a third and fourth; nay if the ſymp-"toms were very urgent, they gave two or three in the ſpace "of twelve hours, as there is no time to be loſt in this diſ-"eaſe; for they did not find this evacuation ſubject to the "ſame objections as briſk purges which a man in the plague "is unable to ſupport." Dr. Patrick Ruſſell alſo approves of emetics at the commencement, although the prejudice of the

* See his Natural History of Aleppo.

Aſiatics againſt them, prevented his employing them at an early period.

We have reaſon to believe, that in the progreſs of the diſeaſe they will ſeldom be of much ſervice, and by their debilitating effects they may do harm. When retching occurs without vomiting, an emetic is frequently ſerviceable. When it fails to allay this ſymptom, opiates often ſucceed.

There appears to be little doubt of the propriety of opiates, uſed for the purpoſe of allaying reſtleſsneſs and procuring ſleep, in all caſes where the excitement is not conſiderable. Dr. Patrick Ruſſell ſays he never ſaw them produce coma.

Almoſt all phyſicians who have practiſed in the plague agree, that much purging is hurtful. A ſpontaneous diarrhœa is always a dangerous ſymptom; on this account, in thoſe places where the diſeaſe is frequent, there is the utmoſt dread of cathartics; and this often proves an obſtacle to the exhibition of any laxative or clyſter, however mild

Suppoſitories are much uſed in Eaſtern countries, but even theſe are avoided in the plague, ſo that the bowels often remain inactive for a long time, and it is ſaid without the patient appearing to ſuffer from it.

We may ſay of this, as of blood-letting, that in a diſeaſe whoſe ſymptoms are ſo varied, it requires much experience to aſcertain the effect of any mode of treatment; and we have a double reaſon for drawing our concluſions cautiouſly, when the meaſures which appear ſafe, have in ſimilar caſes been found pernicious. Beſides, although the common inconveniences of coſtiveneſs be leſs felt in this diſeaſe, than in many others, it ſeems often, by occaſioning an accumulation of irritating matter in the inteſtines, to induce the very effect which we dread from cathartics.

When diarrhœa occurs, whether ſpontaneouſly or from medicine, it is for the moſt part readily checked by opiates at

the commencement of the diſeaſe; but in the advanced ſtages, opiates, aſtringents, and all other means often fail, and then the prognoſis is fatal.

It was obſerved that ſpontaneous ſweating is often attended with the beſt effects. But, as I have already had occaſion to remark, there is generally a great difference between the effects of ſpontaneous ſweating and that produced by art. The effects of antimonials in the plague have not been aſcertained. Dr. Ruſſell thinks that, combined with opium, they promiſe to be of ſervice. Little is to be expected from valerian, contrayerva, bezoar, and other ſimilar articles, regarded as diaphoretics, and much celebrated in this diſeaſe. I have not ſeen any account of the cold affuſion having been employed in it. We have reaſon to believe that it may often be of uſe in the early ſtages.

A very different mode of exciting the action of the ſkin, to which I alluded in ſpeaking of the treatment of fever, has lately, it is ſaid, been attended with great ſucceſs in the plague. It was propoſed by Mr. Baldwin, the Britiſh agent and conſul-general at Alexandria, and has been made known to the public by a ſmall treatiſe in the Italian language by Count Bertchfold; the following extract from which has been tranſlated into different languages, and circulated throughout Europe.

"The directions are ſimply theſe: immediately after a "perſon is perceived to be infected with the plague he muſt "be taken into a cloſe room, and over a brazier of hot "coals, with a clean ſponge dipped in warm olive oil, his "body muſt be very briſkly rubbed all over, for the purpoſe "of producing a profuſe ſweat. During the friction, ſugar "and juniper berries muſt be burnt in the fire, which raiſe "a denſe and hot ſmoke that contributes to the effect.

"The friction ought not to be continued more than four

" minutes, and a pint of oil is enough to be uſed at each
" time.

" In general, the firſt rubbing is followed by a very co-
" pious perſpiration; but ſhould it fail of this effect, the
" operation may be repeated, firſt wiping the body with a
" warm, dry cloth; and in order ſtill farther to promote per-
" ſpiration, the patient may take any warm ſudorific drink,
" ſuch as elder-flower tea, &c. It is not neceſſary to touch
" the eyes; and other tender parts of the body may be
" rubbed more gently.

" Every poſſible precaution muſt be made uſe of to prevent
" the patient taking cold, ſuch as keeping covered thoſe parts
" of the body not directly under the operation; nor muſt the
" linen be changed till the perſpiration has entirely ſubſided.

" The operation ſhould be repeated once a day, until
" evident ſymptoms of recovery, begin to appear. If there
" are already tumours on the body, they ſhould be gently
" and more frequently rubbed, till they appear to be in a
" ſtate of ſuppuration, when they may be dreſſed with the
" uſual plaiſters.

" The operation ought to be begun on the firſt appearance
" of the ſymptoms of the diſeaſe; if neglected till the nerves
" and the maſs of blood are affected, or a diarrhœa has com-
" menced, little hopes can be entertained of cure; but ſtill
" the patient ſhould not be deſpaired of, as, by an aſſiduous
" application of the means propoſed, ſome few have reco-
" vered even after diarrhœa had commenced.

" During the firſt four or five days the patient muſt obſerve
" a very abſtemious diet; the author allows only a ſmall
" quantity of vermicelli, ſimply boiled in water. Nor
" muſt any thing be taken for the ſpace of thirty or
" forty days, except very light food; as he ſays, an indiges-
" tion in any ſtage of the diſorder might be extremely dan-

" gerous. He does not allow the uſe of wine till the
" expiration of forty days.

" There is no inſtance of the perſon rubbing a patient
" having taken the infection. He ſhould previouſly anoint
" himſelf all over with oil, and muſt avoid receiving the
" breath of the infected perſon into his mouth and noſtrils.
" The prevention to be uſed, in all circumſtances, is that of
" carefully anointing the body, and living upon light and
" eaſily digeſtible food. "

Mr. Baldwin obſerves, that among upwards of a million of people who died of the plague in Upper and Lower Egypt, during the ſpace of four years, he could not diſcover a ſingle oil-man or dealer in oil.

The buboes and carbuncles often require ſome attention, but their treatment belongs to the province of ſurgery.

CHAP. VI.

Of the URTICARIA.

THE Urticaria or Nettle-raſh is defined by Dr. Cullen,
" Febris amphimerina.* Die ſecundo rubores maculoſi

* The term amphimerina is generally used to express a fever, which returns daily, and is always finished within the day, so that it is a quotidian intermittent. The term, however, has not always been employed in precisely the same sense.

" urticarum puncturas referentes, interdiu fere evanescentes, " vespere cum febre redeuntes, et post paucos dies in squa- " mulas minutissimas abeuntes. "

SECT. I.

Of the Symptoms of the Urticaria.

Dr. Cullen remarks, that he gives the character of the nettle-rash rather from the accounts of others than from his own observation, as he had seldom seen the disease, and never a single case of it, in which it run the course described in his definition.

Sydenham considers it a species of erysipelas, and describes it to be a slight fever, soon followed by an eruption of pustules over the whole body, resembling the appearance produced by the stinging of nettles. The reader will also find it described by Vogel,* Muller,† Burserius,‡ Dr. Heberden,§ and others. The best account of it which I have seen is by Dr. Willan

" The symptoms preceding the eruption," he observes, " are pain and sickness at the stomach, head-ach, great " languor or faintness, with a disposition to sleep, a sense of

* Prælect. Acad. de Cog. &c.

† De Cog. et Cur. Morb.

‡ Institut Med. Pract.

§ First Volume of the Medical Transactions.

" anxiety, an increaſed quickneſs of the pulſe, and a white " fur on the tongue. In two days, or ſometimes later, after " theſe ſymptoms, the wheals," (Dr. Willan's name for the eruption of the urticaria), " appear with an efflorescence in " patches of a vivid red, or ſometimes nearly of a crimſon " colour. They are preceded by fits of coldneſs and ſhiver- " ing, and are attended with a moſt troubleſome itching or " tingling, which is greatly aggravated duringthe night, and " which prevents reſt for many hours. In order to avoid " this inconvenience, I have known many perſons ſleep on a " ſofa without putting off their clothes, as their diſtreſs be- " gins immediately on uncovering the body. The patches " often coaleſce ſo as to produce a continued redneſs: they " appear on moſt parts of the ſurface, but they are diffuſed " particularly on the ſhoulders, loins, nates, thighs, and " about the knees. They extend likewiſe to the face; and " there is ſometimes a red circle round the palm of the hand, " accompanied with a ſenſation of violent heat. They ap- " pear and diſappear irregularly, firſt on one part, then on " another, and they may be excited on any part of the ſkin by " ſtrong friction or ſcratching. During the day, the effloreſ- " cence fades, and the wheals in general ſubſide, but both of " them return with a ſlight febrile paroxyſm in the evening. " The red patches of efflorescence are often elevated above " the level of the adjoining cuticle, and form denſe tumours, " with a hard diſtinct border: the interſtices are of a dull white " colour. When the patches are numerous, the face, or the " limb chiefly covered with them, appears tenſe and conſide- " rably enlarged. At the latter end of the diſorder, the eye- " lids are red and tumefied, and there is often a ſwelling and " inflammation on the ſides of the feet. On the appearance " of the eruption, the pain and ſickneſs at ſtomach are in ge- " neral relieved, but when it diſappears, theſe ſymptoms re-

" turn. The whole duration of the febrile nettle-rash is " seven or eight days. As the eruption declines the tongue " becomes clear, the pulse returns to its usual state, and all " internal disorder ceases: the efflorescence exhibits a light " purple or pink colour, and then gradually disappears, being " succeeded by slight exfoliations of the cuticle."

This disease in general is unattended with danger, although instances have occurred of its proving fatal in very unfavourable habits. One is related by the author just quoted.

The eruption of urticaria unattended by fever is a very common disease. In Worcestershire there are few affections of the skin more frequent. Dr. Willan enumerates several species of it.

SECT. II.

Of the Causes of Urticaria.

URTICARIA is most apt to appear in summer; and in those of a sanguine and plethoric habit. It is more frequent in children than in adults. Like many other eruptive fevers, it is connected with the state of the primæ viæ. Sydenham observes, that it occurs at all seasons of the year, and seems often produced by too free an use of thin wines or other similar liquors. Burserius says, he has seen it arise from irritating matter in the primæ viæ, or from the perspiration being checked; and Dr. Willan gives cases in which it evidently arose from affections of the stomach. In children it seems often occa-

ſioned by teething. It ſeems doubtful from theſe circumſtances, whether it be properly arranged among the exanthemata, from which it alſo differs in not being contagious. It may attack the ſame perſon ſeveral times, and there are inſtances of its conſtantly recurring on every ſlight cauſe of derangement. It ſeldom, however, appears as a ſymptomatic affection, and one ſpecies of it at leaſt, is always preceded by fever.

SECT. III.

Of the Treatment of Urticaria.

THE treatment of urticaria differs little from that of common ſynocha. An emetic, as may be inferred from what has been ſaid, ſhould always be exhibited at the commencement, and the bowels cleared. Dr. Willan thinks antimonials objectionable, on account of the debility which frequently attends this diſeaſe, and for the ſame reaſon recommends in its decline, peruvian bark with the ſulphuric acid.

END OF THE FIRST VOLUME.

APPENDIX.

As I consider it the duty of every medical man to contribute as far as he is able to extend a knowledge of the cow-pox; and as the nature of this treatise only allowed me to point out its safety and efficacy as a preventive of small-pox,* I am happy in having it in my power to lay before the reader the following instructive extracts from a letter with which I was favoured by Dr. Jenner.

"The vaccine pustule exhibits many varieties of tint during its progress. The three following are the most predominant; (observe I am now speaking of the *correct* vaccine pustule) pink, pearl and amber, from the 6th or 7th day to the 9th or 10th. About this time, and sometimes onward to the 11th or 12th day, it assumes a bluish cast; but this is not common, nor is it of any consequence whether it appears or not. In my early treatises, when speaking on this subject, I particularly noticed this colour, but I was then alluding chiefly to its colour as it appears on the teats of the cow.

"I will just mention, as I wish it to be as universally understood as possible, that the chief point to be attended to by every one who vaccinates, is the state of the patient's skin, as it is so apt when under the influence of herpetic eruptions to induce varieties of the vaccine pustule; and these varities, according to their gradations or deviations from the perfect pustule, produce gradations with regard to security—that is to say, if the deviation is trifling, security may be depended on; if the pock in its progress puts on a midway appearance, partaking as much of the herpetic as the vaccine character, the case is doubtful; and when the her-

* Vol. 1, p. 398, and seq.

petic character follows the puncture, and prevails throughout its course, then it is to be considered as of no avail whatever. However, with due attention, this tendency to anomaly can commonly be controuled with great facility. If I find the pustules running *wild* in consequence of these blotches, I *deaden* them at once, by the use of ung. hydrargyri nitrati. In early infancy, when they are detected behind the ears or on any tender part of the skin, my application is a solution of the sulphat of zinc or the acetate of lead. It is curious to observe how quickly then will the pustule assume its perfect character and maintain it; thus affording the security sought for. It would have been extraordinary indeed if the whole phænomena of vaccination had burst upon my mind at once. It was not till the year 1803 that I discovered this was the ordinary cause of interruption to the perfect progress of the vaccine pock; and in 1804 I published my first paper on the subject in the Med. and Phys. Journal for August. My next was incorporated with Dr. Willan's work on vaccination.

"The same coincidence (irritative eruptions) I am convinced from the most ample testimony, is the source of failure in variolous inoculation and of small-pox more than once in the same individual when communicated in the natural way. Here I could launch out pretty widely had I time or limits. What a field does this open to the view of the physiologist! A single vesicle, such as appears on the lip, for example, in catarrh, is capable of altering the action of the skin, consequently the stomach, and next the whole fabric. What light does it throw on the action of blisters!"

The following extract I give at Dr. Jenner's request from his letter to Dr. Willan,* just alluded to, farther illustrating the subject of the latter part of the above extracts.

"Thos. Church, son of Thos. Church, carpenter, at Berkeley, was inoculated" "for small-pox," "by Mr. Williams, (late a surgeon of eminence at Dursley, in this county, and a very experienced inoculator, but who has now retired from business,) with a party of near twenty other young persons. Nothing very particular was observed during the progress of infection, except that his arm inflamed early and with more than ordinary violence, maturated, and was several weeks in healing. He sickened about the usual time, and had eruptions, which were considered as variolous, but whether they maturated or not, I cannot ascertain. After the lapse of four

* See Dr. Willan's Treatise on Vaccine Inoculation, Appendix, p. 6, and seq.

years, on being exposed to the small-pox, he caught the disease and had it severely. This youth was, from his infancy, affected with tinea capitis, and a pretty constant succession of blotches about his face and different parts of his body. His head was now well, and his skin nearly free from any eruption. That the disease he caught, four years after the inoculation, was really the small-pox, there could be no doubt, as several children were inoculated from the pustules, who had it correctly.

"I have often been astonished at seeing how small, and apparently how trifling, a local affection of any part of the skin, is capable of occasioning derangements in its action in parts at a distance, although its disordered state be of such a nature, as not to be discernible by the eye. For example; a small excoriation behind the ear—two or three vesicles, even though of catarrhal origin,* on the lips, or about the nostrils—a few scurfy spots on any part of the body—and even those vesicles, and the subsequent state of the skin, that are produced by external injury, (as I lately witnessed on vaccinating a boy whose face was injured by the explosion of gun-powder), appear as capable of producing irregularity in the progress of the vaccine vesicle, as more extensive cuticular affections. Vaccination, when these maladies are present, seems to shew, that the whole surface of the skin is influenced at the same time, but in separate portions; for on one arm I often produce a perfect vaccine pock, and on the other, from the insertion of a portion of the same virus, one that is imperfect, and which would afford no security. Indeed, on the same arm within the space of an inch from each other, there will often be this difference in the appearance of the pocks—one putting on the perfect character, and the other deviating so widely, as to resemble more nearly that of an herpetic vesicle, accompanied with inflammation, and commonly ending in a soft, amber-coloured, or blackish scab—and sometimes, especially if it be much disturbed by scratching, in ulceration. The probability then is, that the skin, at the point of insertion, is sound and in its natural state in the one instance, and diseased in the other; but not so, as I have before observed, as to be perceptible to the eye.

"I have not seen a person vaccinated while affected with syphilitic eruptions, but I think it proper to mention, that the suppurative itch, deranges the progress of the vaccine pustule, like the other cutaneous diseases, to which it bears a resemblance."

* Herpes Labialis; see Rep. on Diseases in London, page 6.

I subjoin the instructions for vaccine inoculation, published by order of the Medical Council of the Royal Jennerian Society.

"An accurate knowledge of the signs of infection, and of the character and progress of the vaccine vesicle, is essential to the success of this inoculation.

"The Signs of Infection, and Description of the Vaccine Vesicle.

"When vaccine inoculation proves successful, a small red spot, with a degree of elevation which may be felt, commonly commences on the third day. When examined with a magnifying glass, it seems to consist of a small tumour, surrounded by a slight efflorescence.

"Between the third and sixth day, a vesicle appears; the shape and magnitude of which depend much on the mode in which the inoculation has been performed: when it is performed by a slight puncture, the vesicle will be small and circular.

"The edge of the vaccine vesicle is elevated and well defined; the centre is depressed, and a speck is there visible, of a darker colour than the rest of the surface. This vesicle is distinguished from other vesicles by the peculiarity of its structure, which is cellular, and somewhat hard and firm. At first it is of a light pink colour, sometimes blended with a bluish tint, gradually changing in its progress into a pearl colour. Its contents are limpid, and almost colourless. It commonly increases in size till about the tenth day.

"In its early stages it has usually a small inflamed ring round its base, which about the ninth day begins to spread rapidly; and about the tenth forms an areola, more or less circular, an inch and half or more in diameter. This areola is of a pink, scarlet, or crimson hue; and is attended with some degree of hardness and tumefaction. It continues nearly stationary a day or two, and then begins to fade; sometimes forming on its decline, two or three concentric circles.

"When the areola is perfectly formed, the vesicle begins to decline; first it turns brown in the centre; then it is gradually converted into a hard, smooth, shining scab, of a dark mahogany brown colour, approaching to black; and, in its general appearance, has not unaptly been compared to the section of a tamarind stone. This scab commonly falls off about the

end of the third week; and leaves a circumscribed cicatrix, clearly denoting that the true skin has been affected.

"In the computation of time, the day of inoculation is to be considered as the first day.

"*Occasional Deviations of the Vaccine Vesicle from its ordinary Appearances and Character.*

"Deviations are occasionally met with, even in the genuine vaccine vesicle; chiefly with regard to its rise, duration, and contents.

"It seldom or never appears earlier, but often later than the period already mentioned; sometimes not till after the expiration of a fortnight or three weeks; but if it then makes a regular progress, it renders the patient equally secure as if it had appeared at the usual time.

"Sometimes the vesicle is ruptured by external violence. In that case, the scab will in general be less firm, and of a lighter colour. Occasionally also, instead of the regular progress to desiccation, as above described, it passes into a state of ulceration, with a much more extended inflammation.

"The contained fluid instead of being limpid as usual, is now and then found opake.

"*Spurious Pustules, which afford no Security against the Small-pox.*

"The success of the operation is doubtful, when there is any considerable deviation from the usual course of the disease; whether premature inflammation, irritation, itching, or vesication occurs; or the progress of the vesicle is too rapid, its contents yellow or opake, its texture soft, its centre elevated, or its form not well defined; or whether a premature efflorescence takes place, and a distinct, vivid, circumscribed areola is wanting.

"This anomalous vesicle, or spurious pustule, as it is called, is more liable to be broken than the regular genuine vesicle, from its centre being more elevated, and its texture less firm. When broken, it is frequently succeeded by ulceration; or by a light brown, or amber-coloured creeping scab.

"*Probable Causes of Spurious Pustules.*

"Spurious pustules may be occasioned not only by matter taken from a spurious pustule, but also by matter taken from a genuine vesicle at too late a period; or by that which has been injured by keeping, exposure to heat, or any other cause. They may also be occasioned by using rusty lancets in inoculating;—by rude and unskilful methods of performing the inoculation; or by the genuine vesicle having been destroyed at an early stage; and the regular progress of the disease thus interrupted.

"*The Methods of taking Vaccine Matter for Inoculation, and of preserving and conveying it.*

"Matter may be taken from a genuine vesicle at any time from its commencement till the areola begins to spread; commonly till the eighth or ninth day, sometimes later, but never after the areola is fully formed.

"It is to be taken by small superficial punctures, made in several parts of the vesicle with the point of a lancet introduced horizontally. Time should be allowed for the fluid to exude, which will appear on the vesicle in the form of small pellucid drops. If necessary, very slight pressure may be applied with the flat surface of the lancet, to quicken the discharge.

"Great caution must be observed in this process; or violent inflammation, and extensive ulceration may sometimes ensue.

"The matter may be received on the points of common lancets, when it is designed for use immediately, or within a very few days; otherwise these instruments cannot with propriety be employed either for the preservation or conveyance of vaccine matter, as when charged with that fluid they soon rust. An ivory lancet is not liable to this objection. It may be fixed in a handle, and screwed into a case, in order to exclude air.

"A common method is, to take two small square pieces of glass, on the centre of one of which the matter may be received, by applying the glass to the vesicle, punctured in several places in the manner before described, and covered with the fluid; it may then be suffered to dry, and applied to the vesicle repeatedly. When fully charged, and dry, it

is to be covered with the corresponding piece of glass, and wrapped up in writing paper, or goldbeater's skin.

"Matter may be also taken on thread, which, being imbued with it, must be suffered to dry, and then charged again: this process may be repeated till it is well saturated: it may be kept in a phial, or in a quill, or a piece of a tobacco-pipe, stopped with white wax:—the heat necessary to melt sealing-wax might injure the matter.

"Another way of preserving matter is, to take it on the end of a quill, which, when dry, may be inserted into the barrel of another quill: or if slender portions of a quill be pointed like tooth-picks, a number of them, when charged, may be inclosed in the barrel of one quill. These, as well as the thread, afford convenient modes of conveying the matter in a letter to any distant place.

"A small instrument made of ivory, shaped like the tooth of a comb, and pointed like a lancet, which may be called a Vaccinator, is in every respect as well adapted to the same purpose; and not being liable to bend, it is introduced into the puncture with more ease and certainty than the tooth-pick. These instruments require much less matter to charge them than thread or glass; but when they are not intended to be used soon, they ought to be repeatedly charged.—When they are to be used in a short time, it is sufficient to wrap them in paper.

"Matter must always be allowed to dry without heat in the shade, and be kept in a dry and cool place.

"Every practitioner who has not a constant succession of patients, ought to take matter when he has an opportunity, and to preserve it for any future occasion.

"*The Modes of Inoculation.*

"The constitutional, as well as the local symptoms of the vaccine affection, depend in a great degree on the mode in which the virus is inserted. The smaller the wound of the skin is, the lighter in general is the disease.

"Fluid matter is better than dry, when it can be procured, because it is more likely to produce infection; and the operation is more lightly and quickly performed. Hence it is evident, that in every instance where it is practicable, the patient from whom the matter is to be taken should be present, and the matter should be transferred immediately from arm to arm.

"Inoculation is generally performed in the upper arm, near the insertion of the deltoid muscle; but in some adults, who are likely to use the arm much, it is more adviseable to inoculate on the inside of the leg, a little below the knee.

"The point of a lancet being charged, the skin should be stretched, that the cuticle may be penetrated with more ease. A small superficial puncture is then to be made with the point of the lancet, which will be more likely to leave the matter in contact with the skin, and to produce the desired effect, if it be held nearly in a horizontal direction. It is also worthy of remark, that when held in this direction, the lancet meets with greater obstruction when it has penetrated to a sufficient depth. On the contrary, when it is inserted in a more oblique or a perpendicular direction, it often penetrates suddenly to such a depth as to cause an effusion of blood, which washes away the matter, and prevents the operation from succeeding. In order to render infection more certain, the point of the lancet may be charged with matter a second time, and wiped on the puncture.

"When several successive inoculations are to be performed, the lancet should be dipped in cold water, and wiped after every puncture.

"Dry matter has been sometimes known to succeed after the expiration of several months, but that which is recent is always preferable.

"Dry matter on glass may be moistened with a little cold or tepid water on the point of a lancet, allowing it some time to dissolve, and blending it by a little friction with the lancet. It must not be much diluted, but of a thick consistence. It is to be inserted in the same manner as the recent fluid.

"Dry matter on the barrel of a quill may be applied without dilution, to a very small abrasion or incision of the skin: and, being held in contact for some time, and then repeatedly drawn over the part, it will dissolve and be lodged in the wound.

"When ivory lancets, tooth-picks, and vaccinators, charged with dry matter, are used, the matter should not be first diluted, but a puncture having been first made with a common lancet, the point of the instrument is to be inserted, and held in the puncture half a minute or more; when the matter will gradually dissolve, and remain in the part. If the part of the instrument which is charged, be afterwards wiped repeatedly upon the edges of the puncture, it will tend to ensure success.

"Thread, charged with dry matter, may be used either dry or just moistened with cold or tepid water. A slight incision

or abrasion is then to be made, not more than the eighth part of an inch in length, on which a small portion of the thread is to be placed. This is to be covered with a small bit of paper, and to be retained two or three days by a mild adhesive plaister;—what is called court plaister is liable to produce irritation.

"Inoculated patients must be cautioned not to wear tight sleeves, and not to injure the arm by pressure, friction, or any other violence, lest extensive inflammation or ulceration should ensue.

"One vaccine vesicle secures the patient from all danger of the small-pox; but in many instances it is better to inoculate in both arms, especially when the small-pox is epidemic, or the matter is dry, or the place of the patient's residence distant.

"Lancets used for inoculation should be kept clean and bright.

"*Constitutional Symptoms.*

"The constitutional symptoms sometimes occur at a very early period; but more commonly from the seventh to the eleventh day.

"In some cases the patient is drowsy; in others restless. Sometimes there is a chilliness, succeeded by heat, thirst, headach, and other marks of febrile affection. Now and then a sickness or vomiting takes place, especially in infants.

"The constitutional symptoms, of whatever kind, are in general slight and transient, and such as require no remedy.

"In a great proportion of cases there is no perceptible indisposition; nevertheless, the person vaccinated is not the less secure from the future infection of the small-pox, provided the progress of the vesicle has been regular and complete.

"Care must be taken not to confound the symptoms of infantile or other diseases with those of vaccine inoculation.

"*Medical Treatment.*

"In general no medicine is required in this mild affection; but if the symptoms happen to run a little more high than usual, the same remedies are to be applied, as if they proceeded from any other cause.

"No preparation is necessary; and no cathartics need be given either before or after vaccination.

"Should inflammation of the arm exceed the usual bounds, which rarely happens but from tight sleeves, pressure, or friction; it may soon be checked by the very frequent application of compresses of linen dipped in water, aqua lithargyri acetati composita, or a solution of one drachm of cerussa acetata in a pint of water. These are to be applied cold.

"If the scab be rubbed off prematurely, and ulceration take place, cooling and astringent applications may be used, such as a drop of aqua lithargyri acetati, which should be allowed to dry on the part; and then be covered with compresses, dipped in water, or any of the saturnine applications above mentioned, and frequently renewed.

"When the ulceration is deep or extensive, a poultice, either of bread and milk or of bread with any of the saturnine preparations, may be applied, as the case seems to require. They must never be applied till they are nearly or quite cold.

"In such foul and obstinate sores as resist the foregoing applications, the unguentum hydrargyri nitrati, the argentum nitratum, or other similar applications, are sometimes resorted to with advantage. A single dressing with these substances is usually sufficient; after which the sore heals under the mildest applications.

"Spurious pustules are frequently followed by ulceration at an early period. This ulceration is to be treated in the same manner as if it proceeded from the genuine species.

"An assurance of perfect security from vaccine inoculation can only be obtained by carefully observing the whole progress of the disease. If any doubt remain, the operation ought to be repeated.

"When the patient has been previously exposed to the infection of the small-pox, that disease will be superseded more or less, according to the time which is suffered to elapse before the inoculation of the cow-pock.

"The advantages of vaccine inoculation being now fully ascertained, it is the duty of every member of society, and particularly of every member of the medical profession, to discourage the inoculation of the small-pox."

The foregoing observations may be regarded as containing nearly the sum of our practical knowledge of cow-pox.

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